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QUANTITATIVE DETERMINATION OF THE AMOUNT OF TANNIN IN VARIOUS VEGETABLE ASTRINGENTS.

By Henry K. Bowman.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

Numerous methods have been employed for the purpose of determining the amount of tannin in astringents. Of these probably none are equal to Muller's, which appears to be the most definite in its results and the easiest in its application.

Muller prepares a standard solution by dissolving 18 grammes of gelatin and 2½ grammes of alum in 320 centimetres of water; 31 cubic centimetres of this solution precipitate one gramme of tannin. To extract the tannin he powders the substance containing it; places the powder in a flask and adds sufficient hot water to cover it; he then boils it for a few moments and decants the liquor carefully into a precipitating glass. This operation is repeated five or six times with more water and at last powder and all are poured into the glass. The presence of the powder does not interfere with the precipitation of the tannin, but even favors the clarification of the liquid; after cooling, the standard solution is added as long as a whitish cloud is formed in the clear liquid.

The principles involved in Muller's method were carried out in determining the amount of tannin in the following substances, although the manner of applying them was slightly changed. A solution of gelatin of the strength employed by Muller being

too thick to use conveniently, a solution of half the strength was used, which was better adapted to the purpose. Most of the gelatin to be obtained not being pure, it was found necessary to determine the strength of each solution of gelatin employed; this was done by determining the number of cubic centimetres of each solution that were required to precipitate 10 grains of pure tannin; and this then taken as the standard—instead of the amount of gelatin employed in making the solution. In determining the amount of tannin in the following substances, 100 grains were treated by the above process three successive times, and the average of the three results taken as the amount of tannin that each sample of the substance contains. The determination effected in the way above described produced results as follows:

	Per cent.
Alum root (Heuchera americana), 1st sample,	20·40
" " " " 2d "	18·50
Blackberry root (Rubus villosus),	9·75
Trailing arbutus (Epigæa repens),	3·50
Kino (Pterocarpus marsupium), 1st sample,	57·61
" " " 2d "	39·18
Green tea (Thea viridis),	16·75
Black " (Thea Bohea),	13·25
Dogwood bark (Cornus Florida),	3·00
Yarrow (Achillea millefolium),	4·15
Hemlock spruce bark (Abies Canadensis),	7·13
Witchhazel bark (Hamamelis Virginiana),	8·10
Marsh rosemary (Statice caroliniana), 1st sample,	18·06
" " " " 2d "	14·43
Rhatany (Krameria triandra),	22·79
Red rose (Rosa Gallica),	5·49
Bistort (Polygonum bistorta),	21·00
Best galls (ex Quercus infectoria),	80·07
White galls, inferior (ex Quercus infectoria),	30·72
Good commercial powd. galls (ex Quercus infectoria),	52·39
Common agrimony (Agrimonia eupatoria),	4·75
American alder (Alnus serrulata) bark,	4·00
American alder (Alnus serrulata), aments,	1·50
Black birch (Betula lenta),	3·30
Catechu, No. 1,	49·40
" " 2,	40·20
" " 3,	32·80

	Per cent.
Oak bark, young (Quercus alba)	11·21
" " ordinary, " "	6·34
New Jersey tea (Ceanothus americanus),	9·21
Uva ursi (Arctostaphylos Uva ursi), 1st sample,	6·11
" " " " 2d "	6·33
Comptonia asplenifolia (folia),	8·20
Pipsissewa (Chimaphila umbellata),	4·15
Cranes bill (Geranium maculatum), 1st sample,	13·41
" " " 2d "	17·25
Sumach bark (Rhus glabrum), 1st sample,	8·75
" " " " 2d "	14·55
" berries, " "	1·90
Tormentil root (Tormentilla erecta), 1st sample,	30·90
" " " " 2d "	23·46
Hops (Humulus lupulus),	3·67
Pomegranate rind (Punica granatum),	23·83
Bark pomegranate root, " "	2·94

EXTRACTUM PEPO FLUIDUM—FLUID EXTRACT OF PUMPKIN SEED.

By Chas. Hand.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

Take of Pumpkin Seed sixteen troyounces; alcohol, sp. gr. ·835, a sufficient quantity. Bruise the seed with an equal bulk of washed sand, until they are thoroughly comminuted; transfer to a conical percolator; pour upon it the menstruum until three pints have passed, reserving the first twelve fluidounces, and reduce the remainder to four fluidounces by distillation; mix this with the reserved tincture and filter.*

Having been called upon to prepare a fluid extract of Pumpkin Seed for Dr. Cullen, of Camden, N. J., I proceeded in accordance with the process given in the formula, and the results were so satisfactory in all respects, that I thought it worthy as the subject of my thesis.

* *Note.*—Granting the statement of the author, that alcohol of ·835 is the proper menstruum, it is highly probable that the preparation would be better adapted as a vermifuge if it was less alcoholic and partly saccharine which could easily be effected by partial evaporation of the reserve fluid to eight fluidounces and the introduction of four fluidounces of syrup.—*Editor Amer. Jour. Pharm.*

It has proved, in the hands of the above physician, a valuable remedy for "tænia solium," and he regards it as an indispensable addition to the list of new remedial agents. Having given it in the dose of a tablespoonful three times a day for a short period, its action was such as to destroy nearly the whole of the worm, and by continued use it was completely eradicated.

The above is sufficient evidence of its efficacy to admit it as a remedial agent.

Pumpkin Seed have, for a length of time, been known and valued as a medicine for tapeworm, and recent uses of it, more especially in the form of a fluid extract, have established its reputation above other well-known remedies, and indeed in cases where male fern, pomegranate and kamela have not been uniformly efficacious.

No preparations of Pumpkin Seed have been offered which afforded convenience and reliability, being usually administered in the form of an emulsion; and this indeed has operated very much against its general use, and deprived us of an indigenous remedy of great importance. A thought suggested itself to my mind that the above menstruum was applicable to extract the active principle, being a general solvent for proximate principles, in their native combination, and affords a preparation of permanency.

I determined that the fixed oil which the seed contains was not soluble in alcohol; and believed that it contained no efficacy of itself, though it is reputed to be the active principle. It is true it may hold in solution the active principle, whatever it may be. But these experiments demonstrate the fact that it does not depend upon the oil, as the menstruum does not dissolve it.

I exhausted the seed of their oil by means of ether, and from one thousand grains obtained three hundred grains of fixed oil, affording the unusual large amount of nearly thirty-three per. cent. Its sp. g. is ·94; it is of a pale green color, which, on being heated gently, to expell the adhering ether, my attention was called to the brown color which it assumed; and on resting for a few days, it regained its original color. It afforded no striking reactions with the mineral acids. Its taste is somewhat sweet and nut-like. It does not readily become dry, therefore

does not belong to the class of drying oils. Its odor is analogous to that of olive oil; and it is not soluble to the extent of a trace in alcohol; but is soluble in all proportions in chloroform.

A quantity of seed were placed in a mattrass, connected with a suitable condensing apparatus, and subjected to distillation. The distillate was carefully examined and found to contain no traces of volatile oil; neither did the distillate present any acid reaction upon litmus. The presence of an acid was detected in the seed, but afforded such a slight reaction as to warrant the belief that it is not the active principle.

I have found as the other constituents, gum, sugar, starch and chlorophyll. My desire has been to present something of utility, rather than any attempt of chemical research. But it is my further desire to discover the active principle, and present it in an isolated form, which task is reserved until a future opportunity presents itself.

PHARMACEUTICAL STILL.

By Charles O. Curtman, M. D., Professor of Chemistry in the Missouri Medical College.*

The recovery of alcohol and ether, used as a solvent in the preparation of extracts, etc., is of considerable importance to the manufacturer at any time, and, at present prices, amounts to a necessity. Much of the success of the operation depends upon the form and convenience of the distilling apparatus used for that purpose; and the want of a simple still, cheap and easily managed, adapted to the use of both the retail druggist and the country practitioner, has, in many instances, prevented them from preparing their own extracts and other medicaments requiring distillation, and has prompted them to purchase those articles from large manufacturers, some of whom are not always over scrupulous about the purity of their productions. Much has been accomplished in the construction of a still, at once cheap and simple, and easily manipulated, by Prof Procter, of

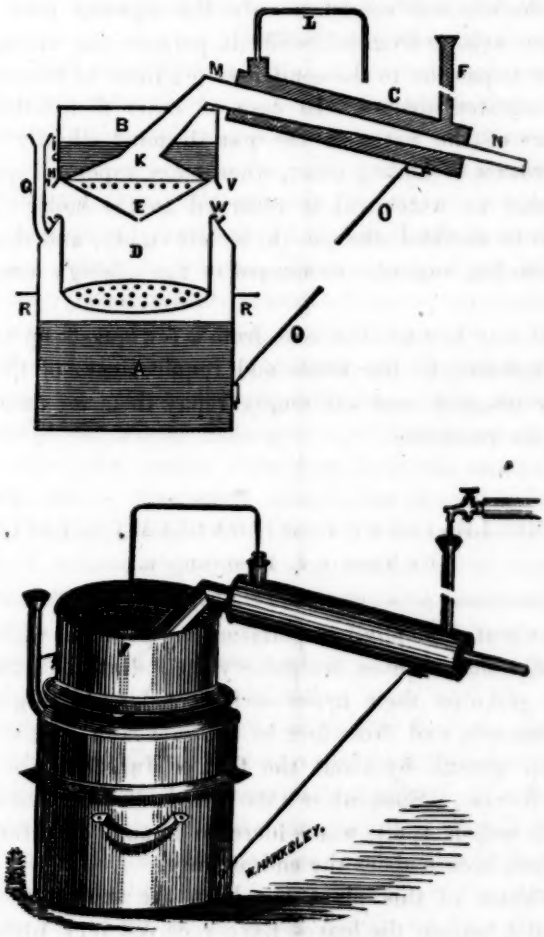
* Communicated by the Author—from proof-sheet of the St. Louis Medical Recorder for March, 1869.

Philadelphia, whose excellent apparatus deserves a much wider distribution than it has yet obtained.

The below described still is intended still more fully to meet the wants of those manufacturing on a small scale for their own use, and permits of a variety of applications not attainable by other modifications.

It consists of a vessel (a), the cucurbit, or boiler, serving as the receptacle of the liquid to be distilled; on top this carries a groove (w) for holding a small quantity of water, into which the prolonged rim (v) of the capital (b) fits loosely, forming a water-joint.* Within this vessel (a) may be suspended a perforated, shallow pan (d) (the diaphragm) for the reception of herbaceous or other substances, through which the vapor generated in (a) is to be passed, as is required in the manufacture of essences, spirits, distilled medicated waters, etc. The capital consists of a pan (b) with double bottom (k) (e), the lower one of which (e) is along the margin perforated by a row of holes, whose object is to spread the ascending vapor, so as to pass close to the sides of (k) the upper one of the double bottoms, where it is partially refrigerated, and the condensed liquid flows back to (a) through a hole in the centre and lower portion of (e). From (k) the exit tube passes out to (m) (n), being between those points enclosed in a cylindrical tube, which by means of the funnel tube (f) may be supplied with cold water, and which by the tube (l), discharges its heated water, forming in that portion of the apparatus a complete Liebig's condenser. The funnel tube (f) should be at least one inch higher than the discharge tube (l). The discharge tube (l) is moveable in its socket, and may be turned round so as to supply either the basin (b) with warm water, or to discharge outside. The tube (g) serves for pouring liquid into (a) without removing the capital, and carries a hook (h) which fastens into the loop (i), thus giving, together with the brace (o), firmness to the apparatus. The flat rim (r) is intended as a support by which the still may be suspended in a water bath, for which purpose a cast-iron

* This is to be commonly filled with water; but when strong alcohol or ether is distilled, it should be filled with flour-paste, and may be wrapped with a narrow strip of muslin in addition.—*Note by the Author.*



stove-pot, or any other vessel of suitable dimensions will answer. The still may be very cheaply made from tin-plate, or more durably from tinned copper. Care should be taken to turn the solder-joint of the tube (m) (n) upward.

In this apparatus the combination of a Liebig's condenser with a partial refrigerator enables the operator to separate strong alcohol at once from dilute tinctures, or alcohol from ether, by the mere regulation of the temperature of the water in the vessel (b), which, when maintained just above the boiling

point of alcohol, will condense only the aqueous part of the mixed vapor arising from (a), while it permits the strong alcoholic vapor to pass on to the condenser (c), there to be converted into concentrated alcohol. In case of ether distillations the temperature of the water in the pan (b) must slightly exceed the temperature of boiling ether, when ether vapor will pass on, while alcohol or water will be returned to the boiler (a). If water is to be distilled, the pan (b) is left empty, and the whole of the ascending vapor is condensed in the Liebig's condenser (c).

The still may be varied in size, from a few quarts up to many gallons, according to the views and requirements of the practitioner or druggist, and will amply repay them for their small outlay in its purchase.

ON THE LEAVES OF PODOPHYLLUM PELTATUM.

By Thomas J. Husband, Jr.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

The leaves of Podophyllum peltatum are palmate, with six or seven wedge-shaped lobes, irregularly incised at the extremity, yellowish green on their upper surface, paler and slightly pubescent beneath, and from four to six inches in width. They attain their growth by about the first of June, at which time the plant flowers. Soon after this period they become covered with bright yellow spots, which increase in size until the leaves decay, which occurs about the end of July.

The rhizome of this plant has been the subject of several essays, but I believe the leaves have received very little attention, although poisonous properties have been ascribed to them.

It was suggested that the leaves might contain a resin similar to the podophyllin of the rhizome, and the following experiments were made with the view of ascertaining whether this was the case.

The leaves were collected during the time of flowering, dried in the shade without artificial heat, and reduced to the "moderately fine" powder of the U. S. Pharmacopœia, (No. 50). A portion of this powder was moistened with alcohol, packed in a

cylindrical percolator and exhausted with that menstruum. The resulting tincture was of a dark olive color and slight bitter taste.

This was evaporated in a water bath to the consistence of thin syrup, and while hot thrown upon six times its measure of cold water, being stirred during the process until the liquids were thoroughly mixed.

A quantity of resin was thus separated which was of a drab color and decided bitter taste, but which was very difficult to remove from the mixture.

After standing for twenty-four hours, only a small quantity of resin was obtained, although filtered first through cotton flannel, and then through paper, the greater portion remaining suspended in the water, from which it could not be separated, even by repeated filtration. The "American Journal of Pharmacy," (Vol. xxxv, page 303,) contains an article by Professor John M. Maish, in which it is stated that in the process for obtaining the officinal Resina Podophylli, the deposition of the resin from the aqueous mixture is greatly facilitated by the addition of muriatic acid, the result being mainly attributable to the formation of the insoluble muriate of berberina, which alkaloid is contained in the precipitated resin.

The mixture containing the suspended resin was therefore acidulated with muriatic acid and the resin immediately separated, leaving the liquid transparent, and of a bright yellow color. By repeated washing with cold water the bitterness was entirely removed from the resin, which was very much darkened during the process, being almost black when thoroughly washed.

To ascertain whether this resin was similar to podophyllin, it was subjected to the several tests for that substance, and was found to agree with it in every particular.

It consisted of two resins, one soluble in ether and alcohol, the other in alcohol, and both in caustic alkalies and chloroform.

When the ethereal resin was dissolved in caustic alkali it was precipitated by acids, but in an alkaline solution of the alcoholic resin no change was produced by the addition of acids.

Much the largest portion was dissolved by ether, and the residue, which was nearly destitute of taste, soon became hard,

while the ethereal portion had the soft consistence of an oleo-resin and remained so, all efforts to dry it being unsuccessful.

Dissolved in alcohol and boiled with purified animal charcoal, the resin was obtained of a light brownish-yellow color and a slight bitter and very disagreeable taste.

This purified resin was taken in doses as large as eight grains, without producing any other effect than slight headache.

A portion of the tincture of the leaves, after concentration, was mixed with boiling water and boiled for ten minutes; the resin was then obtained in very dark masses and entirely free from bitterness, while the liquid had a dark orange brown color, an extremely permanent bitter taste and an acid reaction.

This was concentrated to about one half, and when cold acidulated with muriatic acid, evaporated to dryness and treated with boiling alcohol.

On cooling, the alcoholic solution deposited a quantity of what appeared to be yellow powder, but which had a grittiness when rubbed between the fingers, and when examined with a magnifying glass was found to consist of small yellow crystals.

These crystals were again dissolved in boiling alcohol and were obtained with less color. They were nearly insoluble in cold alcohol and water, freely soluble in both liquids when boiling, and their solution was darkened by ammonia, thus presenting characteristics similar to muriate of berberina.

From the preceding experiments it appears that there exists in the leaves of May-apple a resinous substance, similar in its chemical relations to podophyllin, but without its carthartic properties, and that the bitterness is caused by the presence of berberina.

It would also seem that no poisonous properties exist in the dried leaves.

CRYSTALLIZED NITRATE OF MERCURY IN PHARMACY.

By Hamilton Hutchison.

The author in an inaugural essay states that this salt has been prescribed considerably of late, by Dr. John Neill, of Philadelphia, in solution in glycerin as a substitute for citrine oint-

ment, which is an unsatisfactory preparation, requires a great deal of attention, and is also tedious and troublesome to make, besides changing in color and consistence.

Crystallized nitrate of mercury is prepared by placing four hundred grains of mercury in a small capsule and pouring on it three hundred grains of pure nitric acid (sp. gr. 1·42). The mixture should be stirred occasionally with a glass rod until nearly all the mercury is dissolved, when the rod should be removed and the vessel and solution allowed to stand until cold. Clear crystals will soon appear in the form of plates overlapping each other. About five hundred and sixty grains of the dried salt is obtained, and about ten grains of mercury remains undissolved.

Crystallized nitrate of mercury is soluble in glycerin, slightly soluble in alcohol, ether and acetic acid. Theoretically three hundred and forty-four grains of citrine ointment is equivalent to forty-three grains of crystallized nitrate of mercury. As the salt is quite soluble in glycerin the best manner of using it as a substitute for citrine ointment would be to dissolve forty-three grains in five drachms of glycerin, which is equivalent in proportion to that ointment. (But probably in practice, owing to the soluble condition of the mercurial salt, it would be found much more active.) Dr. Neill has used it in the proportion of twenty grains in a fluidounce of glycerin, which answered his purposes better than citrine ointment. The crystals made with chemically pure nitric acid (sp. gr. 1·42) become dry and hard and will keep for a long time, while those that are prepared with common aquafortis become deliquescent. The salt should be kept in a glass stoppered bottle.

NOTE RELATIVE TO THE EFFECTS OF ATROPIA.

By Dr. S. R. Percy.

[In quoting Dr. Percy's statement relative to the use of atropia for toothache we appear to have conveyed a wrong impression in reference to its tendency to accumulative effects when administered at intervals. The following note will set the matter right.—Ed. Am. Jour. Pharm.]

To the Editor of the Am. Jour. Pharmacy.

Dear Sir.—In the March number of your excellent Journal, p. 127, you profess to quote me, saying, "He considers atropia cumulative in its action." For twenty-five years I have taught the folly of this bug-bear—*cumulative action.* I have never once seen this effect, nor can I find an individual who has. Let me quote in full what I did say. "The effects of atropia remain longer in the system than any medicine of its class. If we compare it with the narcotics we find that they are all eliminated from the system in a quicker time than atropia. If we compare it with the sedatives we find the same result. Medicinal doses of atropia of $\frac{1}{70}$ of a grain will produce effects that will not subside in less than twenty-four hours, and frequently they last for double that time. Caution, therefore, need be used in administering this remedy, and doses must not be repeated too often, otherwise the system may be overwhelmed by the accumulated influence of one dose given before the effects of previous doses have sufficiently passed over." In my monograph on digitalin, p. 35, this subject of cumulative action is discussed, and Dr. A. Fleming, in Ed. Med. Jour., 1862, has written a very able and lucid paper on this subject.

It hardly looks well that you make me say one thing in your journal when I have for years taught the contrary.

Yours respectfully,

S. R. Percy.

GLEANINGS FROM FOREIGN JOURNALS.

By the Editor.

On the emulsion of medicinal oils.—M. Nougaret, of Bordeaux, (Jour. de Pharm., Jan., 1869,) proposes to emulsionize oils in the following manner: Take a perfectly dry bottle; introduce a troy ounce of castor oil, for example, and 75 grains of pulverized gum arabic, and agitate them until the powder is mixed with the oil; then add a troy ounce of orgeat syrup and three drachms of water. Agitate again with the addition of small quantities of the vehicle. In about five minutes the emulsion is complete. The success is constant when care is taken, first, to envelope the gum

particles completely in the oil, and then to add the aqueous vehicle little by little, with a rapid agitation. M. Nougaret finds this plan equally applicable to fixed oils and oleoresins.

[This plan of M. Nougaret is novel only in avoiding the use of a mortar. We, and doubtless many others here in the United States, often proceed as follows: Add one part of gum to two or three parts oil in a mortar; triturate till the mixture is complete, and then add at once twice as much water as of gum used and triturate rapidly until the oil is completely emulsionized; then *gradually* add the remainder of the vehicle with constant trituration. This method may be followed either with or without the addition of sugar, and is especially applicable to oil of turpentine, copaiba, oleoresin of cubebs and to all the emulsionizable oils and oleoresins.—W. P., Jr.]

Simple process for detecting Strychnia.—M. Schachtrupp, (Zeits. Analyt. Chem., p. 284, 1868, and *Jour. de Pharm.*) This process consists in saturating the suspected substance with ammonia, and allow it to dry spontaneously; then heat it with a little amylic alcohol, after which add a few drops of this liquid to sulphuric acid and bichromate of potassa, when, if strychnia was present in the substance, the well-known coloration characteristic of that alkaloid will be obtained.

Synthesis of Coumarin.—Mr. Perkins (of England) has succeeded in obtaining coumarin by a synthetical operation analogous to that which M. Cahours employed to obtain aceto-salicyle $C_{18}H_8O_6$, an isomere of coumaric acid. Acetic anhydride is treated by salicylide of sodium; the mixture becomes hot, is then heated to boiling and poured into water; when an oily body separates, which on distillation gives off acetic acid and hyduret of salicyl, and finally, at 554° F., coumarin in crystalline mass, which, after pressure in paper and recrystallization from alcohol, is obtained identical with the coumarin of Tonka beans.

On substituting butyric and valeric anhydrides for the acetic anhydride in this process, Mr. Perkins obtained other coumarins distinct from the normal, and which he considers as members of a series consisting of acetic, proponic, butyric and valeric coumarins.—*Jour. de Phar.*, Jan., 1869.

Assay of Glycerin.—According to M. Hager (Jour. de Pharm., Jan., 1869,) when glycerin is falsified with sugar or dextrine it may be detected as follows: Dilute it with water, add molybdate of ammonia and some drops of nitric acid and boil. In case these impurities are present the liquid colors blue; if pure it continues colorless. The proportions employed are as follows: Glycerin 5 drops, distilled water 100 to 120 drops, molybdate of ammonia 3 to 4 centigrammes, pure nitric acid one drop; boil for about two minutes.

New use of Mica.—M. Puscher has lately called the attention of the Industrial Society of Nuremberg to the Siberian mica, which is found abundantly in very fine tables, and which so far has only been employed for window-lights and lanterns, and to make the cylinders for petroleum oil lamps, and suggests various new uses of it.

If after reducing it to thin laminæ to be cleansed with sulphuric acid it may be silvered like glass, and its flexibility enables it to be used on curved surfaces for ornament, or as reflectors. When such plates are heated to a certain degree in muffles they assume an unpolished silver surface, and may be wrought into a variety of ornaments. When coarsely powdered and dusted on surfaces marked in figures with moist gelatin, a very brilliant effect is produced.—*Jour. de Pharmacie, from Cosmos.*

Presence of gum in Wine.—M. Pasteur has recognized the presence in all wines, in variable proportions, but always very sensible, of a substance combined with phosphate of lime and having all the general properties of gum, especially that of yielding mucic acid in quantity by the action of nitric acid, identical with that from arabin. It may be separated from the wine by evaporating to one-fifteenth its bulk, allowing the salts to crystallize during 24 hours, decanting the syrupy mother-water and precipitating the gum by four times its bulk of alcohol. It should be collected on a filter, washed with alcohol, redissolved in water and reprecipitated.

On an impurity in commercial Chloroform.—M. Personne, of the Hospital of Mercy, has made known the nature of the alteration, stated by M. Stader in 1867, in the chloroform of commerce ex-

posed to air and light for a certain time. This chloroform becomes acid and emits white irritant vapors which consist almost wholly of chlor-oxycarbonic acid.

According to M. Personne this acid is not formed at the expense of the chloroform itself, but of chlor-oxycarbonic ether, which it fortuitously contains.

This ether boils at 93° F., whilst pure chloroform boils at 140°. When such impure chloroform is shaken with caustic potassa this ether is destroyed; the point of ebullition is steady at 140° F. and the chloroform becomes permanent. It is therefore essential to rectify such chloroform from caustic potassa before using it for surgical purposes.—*Jour. de Chim. Méd, Jan.*, 1869.

Chemical composition of Canaüba Wax.—A paper on this subject by N. S. Maskelyue, M. A., was read before the Chemical Society Jan. 21st. This wax is produced by a palm, the *Copernicia cerifera*, known to the Brazilians as the Canaüba tree. The glaucous coating of the younger leaves contains the wax, each leaf affording about 50 grains. It is collected and melted into a mass of a greenish-yellow color.

Its specific gravity is 0·99907, its melting point 183° Fahr. and it yields 0·14 p. ct. of ash. The crude wax was saponified by boiling it with an alcoholic solution of potassa containing one-sixth of alkali, until clear, the alcohol distilled off and the residue precipitated by neutral acetate of lead of a yellow color. The liquid portion was evaporated to dryness and extracted by ether, which removed the wax alcohols. By repeated crystallization from ether the melissin was obtained in a state of purity. Besides melissin and cerotin the author isolated another wax alcohol, fusing at 105°. The author's experiments did not satisfactorily determine all the constituents. (Chem. News, Jan. 29.)

Ammoniacal Extract of Valerian in Capsules, by M. Dannecy.—Under this name the author suggests a soft extract made from valerian by the agency of ammoniated alcohol. 100 parts of valerian in powder is placed in a percolator, and a mixture of 80 parts of alcohol of 60 per cent., and 20 parts of liquor ammonia (22°), poured upon it. When this has disappeared the percolation is continued with alcohol of 60 per cent. until a

weight of tincture is obtained equal to that of the valerian employed. This is evaporated with continual agitation at the temperature of 158° F. to the consistence of a soft extract, which is put in gelatin capsules, each containing about eight grains.

The author proposes, in this preparation, to exhibit a valerianate of ammonia in the condition in which it exists in the ammoniacal tincture of valerian, in a form not repugnant to the patient.—*Bull. de la Soc. de Bord. et Jour. de Pharm.*

Solubility of Phosphorus in Fixed Oils.—M. C. Méhu has observed that the solubility of phosphorus in fixed oils varies.

The oils of almonds, olives, poppies, sesamum and groundnuts can retain one-eightieth of their weight of phosphorus at the ordinary temperature. The oils of almonds and groundnuts will even retain a little more, but it is not prudent in practice to have them so near saturation.

The oils of colza, rape-seed, linseed, beach-nuts, sun-flower seed, brown cod-liver oil, and neats-foot oil, retain one-seventieth of their weight of phosphorus after eight days exposure in a cellar.

Castor oil differs much from these, as 105 parts of it are required to dissolve one part of phosphorus.

He has not observed much difference in the solvent power of boiled oils heated or those not superheated.

All the experiments have been made in vessels hermetically sealed, and repeated many times, and then allowed to remain in the cellar for eight days to acquire a medium temperature.—*Jour. de Pharm.*

Burgundy Pitch and Caoutchouc Plaster.—M. Lorigne, of Bordeaux, suggests the combination of 35 parts of caoutchouc cut in thin pieces and reduced to a semifluid consistence by aid of 13 parts of petroleum oil in a close vessel, with 300 parts of Burgundy pitch and 25 parts of white wax, previously melted. It is found most practical to add the melted pitch and wax in small quantities at a time to the caoutchouc solution in a basin and agitate rapidly until the mixture is homogeneous, and when all is thus added about 3 parts of glycerin is stirred in to a perfect mixture.—*Jour. de Pharm., Feb.*, 1869.

NOTE ON VIRGINIA OPIUM.

By the Editor.

About the middle of February a note from Mr. William A. Strother, of Lynchburg, Virginia, informed us that he had sent by express a vial of Tincture of Opium, made from opium raised in that vicinity in 1864, and further that he had no more of the opium left, the residue having been given to Mr. Gellatly of N. Y., in June, 1865.

The "Laudanum," made before that time, consisted of half an ounce av. of the opium to eight fluid-ounces of diluted alcohol. Of this about five fluid-ounces were sent, each fluid-ounce representing 27·39 grains of the opium.

Mr. Strother desired to know how it compared with laudanum from Turkey opium, as persons in Virginia were inclined to give attention to opium culture, believing the climate and soil well suited.

In a second note on the subject, Mr. Strother enclosed a letter received from Mr. Powhatan Robertson, who had raised the poppies and prepared the opium from which the laudanum sent was made.

By a comparison of names, dates, etc., it was at once seen that this gentleman, Mr. Robertson, was the same noticed in Prof. I. J. Grahame's article on American Opium, in the Proceedings of the Association, for 1866, and copied into this Journal, (vol. xxxix, p. 50, 1867,) and consequently that the opium of the tincture sent to me by Mr. Strother was from the same source with that examined by Prof. Grahame. The process adopted by Prof. Grahame in the assay (The U. S. Pharm. process for morphia,) not being suited to this purpose so well as Mohr's, it was determined to make a new assay.

Two fluid-ounces of the laudanum, representing 54·75 grains, was evaporated to free it from alcohol, diluted to three fluid-ounces, strained and boiled with milk of lime from an equal weight of lime for fifteen minutes, filtered, lixiviated with hot water, acidulated with hydrochloric acid, evaporated to half a fluid-ounce, neutralized with ammonia, filtered, and an excess of ammonia added and allowed to stand thirty-six hours.

The crystalline precipitate, which was impure and much colored, was washed with diluted alcohol, and afterwards with ether. The residue, weighing 5 grains, was morphia, still considerably colored, giving well marked reactions with nitric acid and sesquichloride of iron. The yield was equivalent to 9·15 per cent. From the manner in which this opium had been made, being all inspissated juice, it was believed that its actual strength should be greater than was indicated in the process tried by Prof. Grahame; and assuming the sample of laudanum to have been made according to the proportions given by Mr. Strother, it will appear that this opium is equal to fair Turkey Opium in strength.

As there is much interest at this time relative to the culture of the poppy, it may be well to copy a portion of Mr. Robertson's note to Mr. Strother, which is dated March 8th, 1869:

"I have received your letter inquiring about the cultivation of the poppy, and the manner of making opium, and regret that I can give so little information on the subject. My experience was very limited, having only cultivated the poppy in a garden on *very rich soil*, where the yield of opium was very great; but I neither measured the land nor weighed the opium. I am satisfied that a deep rich soil is essential to a large yield; the poppy has a long tap root, which enables it to stand severe drouth, provided the tap root can penetrate the soil to a sufficient depth. Alluvial soils I doubt not are best. The young plant is very tender, of slow growth and cannot be successfully transplanted. The seed should be put in drills about three feet wide, the plants standing from one foot to eighteen inches apart, or even more, as it is a very vigorous grower. The last of July or early in August is a good time to sow the seed, as the plants stand the winter without injury.* The single poppy I found to yield more opium than the double, and there is less trouble in obtaining it from the capsules. The single white poppy, or rather the poppy with white seeds, is generally considered the true opium plant. When the capsules are about half grown, or three or four days after the flower has dropped, is the proper time to make several longitudinal incisions on the capsule, taking care not to cut through the capsule so as to injure the seed. The incisions should be made during the evening, and the thickened juice which exudes during the night scraped off the next morning with a dull knife. When it becomes sufficiently dried it can be put up in any shape or size that is desired." * * *

*This was in the Valley of the Shenandoah, Va. It is possible that further north the plant may not be able to resist the wintr.—*Editor.*

ON UNGUENTUM HYDRARGYRI NITRATIS.

By Thomas Jefferson Covell.

(An Inaugural Essay presented to the College of Pharmacy of the City of New York.)

The writer, in endeavoring to produce a proper article of ointment of nitrate of mercury, has reviewed quite all that has been published for the past eighty-nine years, in fifty-five Pharmacopœias and Dispensatories of Continental Europe, Great Britain, and the United States of America, upon the subject, and does herewith present a synopsis in tabular form.

The table shows at a glance the ingredients and quantities, or parts by weight, and each formula is numbered, to facilitate reference as to where that formula is contained, there being nineteen variations of the fifty-six works referred to.

Thirty-one of the Pharmacopœias use lard, twenty-three lard and olive oil, and three lard and neats-foot oil, as a vehicle. The proportion of mercury contained in the various ointments varies from 8·3 per cent. to 5·25 per cent., the average being 6·45 per cent.

The nitric acid, although calculated to a standard of sp. gr. 1·42, has undergone the greatest and most notable change; starting with equal parts of mercury and nitric acid, the table ends with four of mercury to seventeen of nitric acid (1 : 4·25).

In most Pharmacopœias there are no precise directions for the manipulation, in which lies quite all the requirements for success; and for that reason the synopsis will be followed by some detail of the writer's experience, as practical as possible.

Synopsis of Unguentum Hydrargyri Nitratis.

	℥1	℥2	℥3	℥4	℥5	℥6	℥7	℥8	℥9	℥10
Hydrargyrum.....	2	3	1	1	1	1	1	1	2	1
Acidum nitricum,	2·5	4	1	2	1	2	2	2·5	3	2·5
Oleum olivæ.....	0	0	4	0	0	12	9	0	0	0
Adeps.....	24	32	8	12	10	4	3	8	31	15

	℥11	℥12	℥13	℥14	℥15	℥16	℥17	℥18	℥19	℥20
Hydrargyrum.....	1	2	4	2	2	2	3	4	4	3
Acidum nitricum,	2	3	13	3	5	6	7	12	17	8
Oleum olivæ.....	4	16	30	16	0	8	0	30	30	0
Adeps.....	6	16	15	8	6	12	9	15	15	9
Oleum bubulum..	0	0	0	0	18	0	24	0	0	24

§1.—Pharmacopœa Genevensis, Genev., 1789. Pharmacopœa Generale, Taddei Firenze, 1826. Pharmacopœa Taurinensis, etc., Taurini, 1833. Farmacopea teoricopratica, Del-Buc, Piacenza, 1835–36.

§2.—Pharmacopœa Generalis, Spielman, Argentor, 1783. Pharmacopœa Manualis, Anvers, 1812.

§3.—Pharmacopœa Syphilitica, Von Swediaur, Paris, 1799. Pharmacopœa in usum studiosorum, Saunders, Leips., 1790.

§4.—Dispensatorium Fuldense, Francofurtiad, M. Ed. 3tia, 1791. Dispensatorium Lippiacum, genis moderno, 2 vol., Lemgoæ, 1792–94. Pharmacopœa Amstelodamensis nova, Amstelodami, 1792. Pharmacopœa Oldenburgica, Oldenburg, 1801. Pharmacopœa Danica, Hafniæ, 1803. Pharmacopœa pauperum in usum instituti clinici, Hamburg, 1804. Pharmacia rationalis, Piderit, Marburg, 1806. Pharmacopée generale, Brugnatelli. Paris, 1811. Pharmacopœa Succia, Stockholm, 1817. Pharmacopœa Fennica, Aboæ, 1819. Pharmacopœa Hannoverana, Hannov., 1819. Pharmacopœa Austriaca, Vindobonæ, 1820. Pharmacopœa Lusitanica, Ed. Pinto. Lissat, 1825. Pharmacopœa Hassiæ Electoralis, Cassellis, 1827. Pharmacopœa Borussica, Ed. 5tia, Berolini, 1829. Pharmacopœa Hannoverana, nova ed., Hannov., 1833. Codex Medicamentaris Hamburgensis, Hamburgi, 1835. Pharmacopœa Saxonia, Ed. 2da, Dresden, 1837. Pharmacopœa Badensis, Heidelberg, 1841. Pharmacopœa Græca. ed. Boaros Landerer et Sartori, Athens, 1837.

§5.—Pharmacopœa Hispanica, ed. 3tia, Matriti, 1803.

§6.—Pharmacopœa Dublinensis, Dublin, 1807. Pharmacopœa medici practici universalis Swediaur, ed. Van Mons, Bruxelles, 1817. Pharmacopœa, Supplement to London, Rennie, London, 1829. Pharmacopœa, Supplement to London, Gray, London, 1831.

§7.—Pharmacopœa Castrensis, Ruthena auct. Whylie, Petropol., 1808. Pharmacopœa Edinburgens, Edinburg, 1812. Pharmacopœa Danica, nova ed. Hafniæ, 1840. Pharmacopœia U. S. America, Boston, 1820. American Dispensatory, Coxe, Philada., 1825–27. Supplement to Pharmacopœias of London, Rennie, London, 1829. Supplement to Pharmacopœias of London, Gray, London, 1831.

§8.—Farmacopea Ferranni, Bologna, 1825. Farmacopea Ferrarese, ed. 10ma, Padova, 1825.

§9.—Pharmacopœa Gallica, Paris, 1818.

§10.—Pharmacopœa usuelle, theorique et practique, Van Mons, Lourain, 1821.

§11.—Pharmacopœia U. S. A., 1830. Pharmacopœia London, trans. of by Cox and Gregory, London, 1835. Pharmacopœia Londonensis cum trans. Phillipsi, London, 1837.

§12.—Codex Ph. Francaise. redigee par ordre, Paris, 1837. Pharmacopœia nosocomiorum civil, Argentinendum Argentor, 1840.

§13.—Pharmacopœia Edinburgens, Edinburg, 1841.

§14.—Pharmacopœia Dublinensis, Dublin, 1850.

§15.—Pharmacopœia U. S. America, 1840. Pharmacopœia U. S. America, 1850.

§16.—Pharmacopœia London, 1851.

§17.—Pharmacopœia U. S. America, 1860.

§18.—Pharmacopœia British, London, 1864.

§19.—Pharmacopœia British, London, 1867.

§20.—Process in use by the writer, Thos. J. Covell, since 1863, and detailed in experiment §4.

Only two of the nineteen formulas were selected for experiment, the first being that of the British Pharmacopœia, 1867, and the second that of the United States Pharmacopœia, 1860.

The formula of the British Pharmacopœia is §19 of the table, and the directions are thus given:

Dissolve the mercury in the nitric acid with the aid of a gentle heat (query, what temperature?); melt the lard in the oil by a steam or water bath, in a porcelain vessel capable of holding six times the quantity; and while the mixture is hot (what temp.?) add the solution of mercury (query, all at once, or gradually?), also hot (what temp.?), mixing them thoroughly.

If the mixture does not froth up, increase the heat till this occurs. Keep it stirred until cold.

Experiment §1.—The quantities of Br. Ph., §19, were taken. The mercury was allowed to dissolve by the aid of the heat, generated by the reaction, about 125° F.

The lard and oil were heated to 200° F., when the solution of mercury, 125° F., was gradually added, in portions of fl.℥ii, at intervals of two to five minutes, that the reaction might not be too violent, and easily controlled. The temperature, after the first addition, rose rapidly to 230° F.; after the second it fell to 226°; and after each succeeding addition of the mercurial solution fell to 219°, 216°, 214°, then rose to 220°, then fell to 218°, 200°, 190°, at which it remained until the reaction had apparently ceased. It was constantly stirred throughout the entire process. (Loss in weight 13·63 per cent.)

Experiment §3.—The quantities of the U. S. Pharm., §17, were taken, the directions of which are as follows:

Dissolve the mercury in the acid (hot or cold?); then heat together the oil and lard in an earthen vessel (how long?) and,

when the temperature reaches 200° F., remove the mixture from the fire.

To this add the mercurial solution (hot or cold?), and, with a wooden spatula, stir constantly so long as effervescence continues, and afterwards occasionally until the ointment stiffens.

The mercurial solution was added all at once to the melted oil and lard, temp. 200° F. The temperature fell to 160°, then rapidly rose to 260°, the ointment undergoing a violent reaction, and assuming quite a dark brown color. The temperature gradually fell to 220°, at which temperature the reaction gradually ceased. (Loss of weight 7 per cent.)

Experiment §4.—This was one-eighth part of a formula which has been used by the writer for several years,—in fact is the result of experiments made with the official formula during the autumn of 1863, and is here given:

Take of Mercury, 12 oz.
Nitric Acid, sp. gr. 1·42, 32 oz.
Lard (pressed), 36 oz.
Neats-foot Oil, 96 oz.

All by weight.

Put the mercury into a three-pint flask, and add thereto 28 oz. of the nitric acid; let it remain at the ordinary temperature until all of the mercury is dissolved, and the resulting solution is of a beautiful green color.

Place the oil and lard in a suitable earthen vessel, of at least four gallons capacity, and gradually heat the mixture to 180° F.

Now warm the mercurial solution to 160° F., and gradually add it to the oil and lard, at the above named temperatures, in portions of ℥ii at a time, constantly stirring with a glass or porcelain stirrer; the temperature gradually rises to 190°, 200°, 220°, 230°, above which last degree it must not be allowed to rise. The stirring must be continued so long as effervescence continues; and when it ceases, and the ointment has cooled to 200° F., add the remaining 4 oz. of nitric acid, and stir occasionally until cool. (Loss 10 per cent.)

The result of the above formula is shown by sample marked §4.

Experiment §5.—The quantities of the U. S. Pharm. 1860,

§17, were taken. The oil and lard were heated to 125° F., and the mercurial solution was also heated, after solution, to 125°, when it was poured into the oil and lard; the temperature gradually rose to 170°, 172°, at which temperature it remained until effervescence ceased. (Loss 2·3 per cent.)

In this last experiment the ointment was rapidly stirred upon the addition of the acid solution, and afterwards until it began to stiffen.

All of the samples appear in good condition; §1 has evolved some gas, and has been relieved of about one-eighth of the original contents. The remainder has been pronounced a good ointment by a competent gentleman.

§3 has not changed since made, and although not an elegant ointment, from containing many aggregations of particles of $(2(Hg_2O)NO_5)$, the salt which, when the ointment is not heated too high, and in presence of a slight excess of nitric acid and finely divided, gives the beautiful lemon color.

In the foregoing detailed experiments the writer has gleaned the following facts: that heat, within certain range of degrees, and nitric acid of at least sp. gr. 1·42, in excess (although the Brit. Pharm. process shows too much acid), is required.

Without going further into the discussion of the chemistry of the subject, the writer begs leave to submit to the consideration of the College of Pharmacy of the City of New York this paper, and four samples of ointment of nitrate of mercury, prepared in accordance with the foregoing detail of experiments.

NOTE ON PYROPHOSPHATE OF IRON.

By Robert W. Gardner.

Prof. Procter:

Dear Sir:—I notice a communication in the January No. Journal of Pharmacy, in answer to Query No. 26, in regard to Pyrophosphate of Iron.

I have made pyrophosphate of iron in considerable quantities, and found much difficulty at first in getting it to scale properly. After numerous trials I discovered *my* error—*not* the formula's. I did not fully sesquioxidize my solution of tersulphate of iron.

I used nitric acid in the quantity mentioned in the formula, but of deficient strength. Since then I have been very particular to continue the heat, and if necessary add a small extra quantity of acid nitric, (to be subsequently driven off by heat) until the solution tested with ferrid-cyanide of potassium fails to produce the characteristic blue, showing the presence of protoxide of iron.

I am of the opinion that the U. S. Formula will always produce a good article of pyrophosphate of iron, when proper attention is given to details.

Hoping these suggestions may prove of some service, I remain yours respectfully, ROBT. W. GARDNER.

Bergen, N. J., April 6th, 1869.

SULPHATE OF MANGANESE.

BY DR. C. J. RADEMAKER.

To the Editor of the Journal of Pharmacy.

Having occasion to prepare some sulphate of manganese, several formulas where resorted to, as heating binoxide of manganese with sulphuric acid, heating carbon sulphuric acid and binoxide of manganese, and Mr. Lester's process of hydrochloric acid and binoxide of manganese, and boiling the resulting solution with pure carbonate of manganese, all of which gave very impure products, with the exception that the solution was free from iron, but still contained copper, cobalt and nickle.

In order to prepare a pure salt the sulphate was decomposed with carbonate of soda, the carbonate of manganese redissolved in acetic acid, the solution of acetate treated with sulphuretted hydrogen; the solution filtered and decomposed with carbonate of soda, the resulting carbonate of manganese redissolved in pure sulphuric acid. The above process gave a perfectly pure salt. If copper only is present it is not necessary to convert the manganese into acetate, as copper is precipitated from sulphate.

Respectfully, C. J. RADEMAKER, M. D.

Louisville, April 5, 1869.

VERMONT OPIUM AGAIN.

What has already been published in this Journal, in January and March, may be sufficient to exhibit the true character of this false opium; but in order that other evidence beside our own may appear, of the details of Mr. Wilson's process as given by himself, we reprint an article which appeared in the semi-weekly N. Y. *Tribune* of March 5th, 1869. There are some points of the process and apparatus not before noted. It must be evident to every pharmacist that the result is a mixture of extract of poppy leaves and stalks, with a little true opium juice, very variable in composition and wholly unfit to replace the foreign drug except in very large doses.—EDITOR AMER. JOUR. PHARM.

HOME MADE OPIUM.—W. O. Wilson, of Uxbridge, Vt., addressed the club on the advantage of raising our own poppies. He has been engaged in opium growing for five years, and has derived great profit from it. He says a farmer can raise from 300 to 400 pounds per acre, worth in the drug stores from $1,500 to $3,500. In 1867 he planted three-eighths of an acre with poppies, and made 147 lbs. of opium, and sold it for $9 a pound. Another year, from a space of ten paces by five, he took $68 worth. He gives the following rules to guide those who wish to go into the poppy business:

I. Plant in rows 30 inches apart, and drop the seed 8 or 10 or 12 inches apart, from three to six seeds in a hill; then do not cover more than an inch deep.

II. Then hoe them once before you weed them; the second time hoe them—hoe them close as possible with a sharp-cornered hoe; then weed the third time; you will not want to weed the fourth time; dress over; you will need to watch a little for worms.

III. The next in order is to get ready to manufacture the crop into opium. Get your mill and press in good order, then get your vat to hold the pumice, have it lined with tin or brass; then your plates to dry the milk on; get your sifter to cleanse in, and your alcohol to prepare the milk to eat off the morphine (!) from the pumice. This will help, in drying, to prevent souring and to give the odor of foreign opium.

IV. When you commence cutting the plant, you will see there are some plants that are more forward than others; sort them out and cut them first, just before the buds begin to ripen—you must not let them ripen; the seeds want to be full grown; keep sorting every day, until you get through, so as to have them uniform. The main thing to get the matter right is to put half a pint of alcohol to every fifty pounds of the pumice, then let it be stirred well together before pressing; then set a

half hour; then press it. The alcohol will cut the morphine from the plant, then the extract will be perfect and in order; then the odor will be like foreign opium.

V. You will keep the cheese in the press about one half hour—press it dry; about as much time is enough to set. Then have in the side of the setter, two inches from the bottom up the side, put in the faucet so the green can settle below the faucet; then draw off and fill your plates one half-inch deep.

VI. Prepare your rack and shelves, three feet from the floor, eight inches apart, one above another, as high as six feet; have the shelves four rows of plates wide; have them so you can get on both sides with your pail with dipper to pour in the plates, all set on the shelves ready.

VII. You must have the dry-house or room tight, plastered room, so that the heat will escape only from one window; have that drop down about three or four inches, so that the steam can escape. We want no chopping or jarring about.

VIII. As to heat, we want the thermometer hung half-way up the room to temper the heat; you want the heat kept up from 125 to 150 or 160, and have coarse, hard, dry wood; if heat gets down it will sour. The business pays well, so keep up heat night and day until you get through.

IX. As soon as the opium is dry enough to scrape off the plates (don't dry it so hard you can't) put into square forms, one pound in each piece. About 3½ inches square will be the size of one pound of opium.

Mr. Wilson makes two kinds of opium, one by cutting gashes in the capsulus and gathering the milk or gum that exudes. Then he cuts the tops of the plants, saving some for seed, and grinds them in a mill, and dries away the juice on earthen plates. This gummy or bogus opium he mixes with the true at the rate of two ounces of milk opium to 14 of the gum opium.

Dr. Hexamer: There is no difficulty or mystery about the poppy. It is raised all through the south of Europe. We import a great deal of this medicine. Mrs. Winslow uses a great many tuns of it to make her soothing sirup.

Dr. Sanger—Mr. Chairman, 'opium is a dangerous and fascinating remedy. Doctors use it quite too often, and they seldom let the patient know how often. The habit of eating it is easily formed but almost impossible to throw off. Alcohol is bad enough, but opium is a fiend. I think the club should with caution suggest the prostitution of our virgin soil to the production of any more noxious drugs. Hops do no good. But I should deprecate any step the effect of which would make opium cheaper. The dearer the better. I wish it was $100 an ounce.

Dr. Miller—This man charges $400 for his mill, seed for an acre and his manual for opium growers. For $2 the Harpers will sell you a book after reading which no man will feel inclined to help curse the race by making opium cheap.

ON ELIXIR OF CALISAYA, IRON AND BISMUTH.

By Robert W. Gardner.

Editor Journal of Pharmacy:

Dear Sir,—As an unofficinal preparation, known as "Elixir Calisaya, Iron and Bismuth," has acquired considerable reputation, and is being commonly used in various parts of the country, and having seen no reliable formula published in any of our leading pharmaceutical journals, I would most respectfully submit my process, which I have for years employed, and which furnishes a permanent and reliable preparation, containing just proportions of each active ingredient, free from any disagreeable quality, and the bismuth of which does not conceive such an affection for the bottom of the bottle that it fails to remain in solution.

Take of Pyrophosphate of Iron scales, one troyounce,
Citrate Bismuth, one troyounce,
Sulphate Quinine, twenty-four grains,
Citric Acid, eight grains,
Carbonate Magnesia, one drachm,
Sugar, half a troyounce,
Water of Ammonia, sufficient,
Oil Orange, best, half a fluidrachm,
Oil Lemon, fifteen minims,
Oil Caraway, five minims,
Oil Nutmegs, five minims,
Alcohol, eight fluidounces,
Syrup, twenty fluidounces,
Water, sufficient.

Rub the oils with the sugar and magnesia, gradually adding one pint of water, and filter. Put it into a half-gallon bottle and add the syrup.

Dissolve the pyrophosphate iron in two fluidounces water, and add to the mixture.

Now add seven fluidounces of alcohol.

Put the quinine, citric acid, one fluidounce of water, and the balance (one ounce) of the alcohol in a capsule; heat over a spirit lamp until dissolved, and mix with the other ingredients.

Rub the citrate bismuth with one ounce water, and carefully add sufficient water of ammonia to effect the solution. Mix with the other ingredients.

Add water of ammonia until neutral to litmus paper (avoiding excess), and finally as much water as will bring the whole to the measure of sixty fluidounces, and filter. To be kept and dispensed in dark bottles.

One fluidounce contains about eight grains ammonio-citrate bismuth, eight grains pyrophosphate iron, and the equivalent in quinine of sixteen grains of calisaya bark.

The following is the process I have employed for making citrate bismuth: First,

Take of pure sub-Nitrate Bismuth, two troyounces,
Nitric Acid (sp. gr. 1·44), 1450 grains,
Water, sufficient.

Put the bismuth in a porcelain dish; add the acid, and heat over a spirit lamp until the bismuth is dissolved; then add one fluidounce water, and let stand until cold; then gradually add water, constantly stirring with a glass rod, until a further addition produces milkiness, or until the whole measures one and a-half pints. Filter and set aside. Next,

Take of Carbonate Soda crystals, sufficient quantity,
Citric Acid, three troyounces,
Water, one and a-half pints.

Dissolve the citric acid in the water and add sufficient carbonate of soda (previously dissolved in water) to exactly neutralize the acid. It is important that there shall be no excess of soda, as the resulting citrate bismuth would be contaminated with the oxide after decomposition.

Put the bismuth solution in a suitable vessel, and add, stirring constantly with a glass rod, sufficient of the solution citrate soda exactly to decompose; the precise quantity is known to have been added, when, after placing the whole upon a cloth filter, the washings, after having been suffered to run awhile until clear, *first* fail to precipitate bismuth when dropped into water, and *second* show no precipitate upon the addition of a few drops of ternitrate bismuth, a small quantity of which should be reserved for this purpose. When the liquid portion has mostly passed, pour

water upon the filter until thoroughly washed from nitrate soda, or until the water passes tasteless; then, after draining, transfer to bibulous paper, and dry by gentle heat.

Respectfully,

ROBERT W. GARDNER,

Bergen City, New Jersey, April 16, 1869.

IMPROPER USE OF TITLES.

BY JOSEPH HARROP.

[A name with the appendage M. D. should rightfully belong only to a regular medical graduate. The word "Doctor" is a generic term legitimately applied in many ways with wholly different significance:—Thus we have Medicine Doctors, Divinity Doctors, Law Doctors and Philosophy Doctors, from the regular school, and some of our trans-atlantic Horse and Cattle Doctors have diplomas of European schools. Each of such persons no doubt feels entitled to be addressed as Doctor. The only doctorate that pharmaceutists have aspired to, (except they embrace Medicine) is the Doctorate of Philosophy, and of this class several worthy examples exist in this country, generally educated in Germany, and such usually attach Ph. D. to their name in writing articles. Then there is a class of apothecaries, especially in the rural district towns, who, taking advantage of the tendency of the public to accord the title to any one connected with drugs—accept it, and on their signs and labels exhibit the symbol of dignity and learning as of right.

This is all wrong and contrary to the ethical views of our Association and Colleges. Apothecaries should neither use the title nor practice the profession of the Doctor. So much in obedience to the last sentence of our correspondent. We will go a little farther and say that it is no uncommon occurrence to observe original articles from this Journal reprinted wholly or in part without credit, and as a consequence other journals quoting them from such journals. It is due to honesty and truth to give credit to the original source of all papers worth quoting, when possible, and we ask it as our due.—EDITOR AM. JOUR. PH.]

Mr. Editor.—I am under the necessity of noticing an occurrence which must, I think, very often happen,—the addition of M. D. to the names of individuals writing pharmaceutical papers.

The article on "Fluid Extract of Liquorice-root as an Excipient for Quinia," which was published in your "Journal" for March, over my signature, was copied by several journals with the addition of "Dr." to the name. This I would not consider a personal discredit; but it is, in a professional point of view,

ignoring the rightful source. It is doing what pharmaceutists as a class are, and have been trying for years past to undo; namely, to separate pharmacy from medicine. It would appear that in most of the medical and scientific journals of the day it is taken as a foregone conclusion, that writers on these subjects must be either a doctor or a professor. That the pharmaceutical journals should insist on this point being made known, and well understood, will appear patent to all.

Respectfully,

JOSEPH HARROP.

Leavenworth, Kansas, April 15, 1869.

ADDITIONAL NOTE ON SOAP LINIMENT.

BY J. B. MOORE.

To the Editor.

Dear Sir.—In my hastily written article on "Soap Liniment," which was published in the March number of the Journal, I inadvertantly omitted to state that, where coarse powdered castile soap is used in making this liniment, that the proper deduction from the weight of the soap should be made for the loss of moisture in drying, which, I presume will average in castile soap, as it is usually found in the market, about 14 per cent. If this deduction is not made, the preparation will be found to deposit a portion of the soap on standing. I would state that instead of four troy ounces in shavings, the officinal quantity, I am in the habit of using three troyounces and a half of dry soap in coarse powder, which is nearly the equivalent, and which has proved satisfactory in practice.

Yours respectfully,

J. B. MOORE.

ON TITRATED OPIUM EXTRACT—SVAPNIA.

BY WILLIAM PROCTER, JR.

Many years ago, probably twenty, Prof. David Stewart, of Baltimore, wrote on the importance of preparing laudanum of uniform strength, by making it of assayed opium, or by assaying it in coarse preparation. He brought this subject forward during one of the pharmacopœia revisions, but the difficulty

presented by the skill and preparatory knowledge and the long time required, was too obvious to make its introduction into the code advisable. Meanwhile, the aqueous extract of opium laudanum of Duhamel and Dupuy, were followed by the elixir of opium of the writer, (now the tinct. opii deodorata of the Pharmacopœia). The almost sole fault of the latter preparation, beyond its expensiveness, is want of uniformity arising from the variable strength of opium.

In 1860, Dr. E. R. Squibb, in an elaborate paper published in this Journal, introduces his liquor opii compositus, which, besides being freed from the objectionable and offensive ingredients of opium, was assayed to a regulated strength of four grains of morphia per fluidounce, intended to represent laudanum made from uniform ten per cent. opium, so far as the morphia strength was concerned. Unfortunately, in our opinion, Dr. Squibb introduced his U.S.P. Hoffman's Anodyne as an ingredient to the extent of one-eighth. Whatever advantage this might add in particular cases, it must be evident that, as a substitute for opium and morphia and to be used in various forms of diseases, its omission would have simplified the preparation and rendered it more likely to be adopted into permanent use. Battley's sedative solution may also be classed with the above as aiming to modify and improve the anodyne qualities of laudanum. Quite recently in French Pharmacy, Mr. Adrian has introduced a series of preparations based on titrated or assayed opium of a fixed morphia strength.

The latest of these suggestions to modify opium is that of Dr. J. M. Bigelow, of Detroit, which he called "purified extract of opium," and which quite recently has been taken hold of by Frederick Stearns, of Detroit, as a business operation, substituting the word "svapnia" for that of Dr. Bigelow, as a more promising *trade mark*. It is to be regretted that these gentlemen, in the furtherance of a perfectly legitimate improvement in pharmacy, should have felt it necessary to bow to the spirit of empyricism so rife in our land, in order to secure the profits of their enterprize. If they claimed their preparation as embodying a new and valuable alkaloid, then their name would have been quite appropriate. As hinted in our last number, we have

made some experiments, chiefly with the view of forming an estimate of its value as a pharmaceutical preparation, and in doing this extended our research into an assay of its morphia strength. Whilst thus engaged, the following communication was received from Dr. Bigelow, which we presume was intended for publication, and before proceeding further our readers should hear the views of the author of Svapnia.

DETROIT, March 29th, 1869.

PROF. PROCTER :—

Dear Sir,—In your notice of Svapnia (editorial, pp. 186, 187, *Amer. Jour. Pharm.*), you say that if the manufacturers can keep the composition uniform, and it can do what is claimed for it, it will certainly merit attention, and then that "the morphia strength should be given." In reply, I would state that the preparation does not exclusively represent morphia, nor depend entirely upon it for the hypnotic and anodyne properties of which it is possessed; therefore, neither the effects nor the dose can be made to correspond with that of morphia.* In the first place, in the preparation of svapnia, the alkaloids morphia, codeia and narceia, possessing solubilities of different degrees and in different menstrua, are separated from the other alkaloids, especially thebaina (paramorphia) and the other constituents of opium, without deranging the natural combinations in which they exist. These are concentrated to a fixed standard of measure, that is the menstruum is entirely evaporated, and the exact proportion of the alkaloids determined by assay. After the assay, inert soluble matter is added, sufficient to bring the whole equal to opium of a nine per cent. morphiometrical standard, this standard being found in practice to be the most practicable and by means of which its effects most nearly compare with opium weight for weight.

It is very probable that codeia and narceia in different samples of opium vary to a certain degree, but the difficulties and complications of a perfectly reliable quantitative analysis have hitherto prevented us from making it, and we have, therefore, asssumed that when the crude opium from which we manufacture svapnia is deficient in morphia, it holds good also in nearly the same degree with regard to codeia and narceia, and its strength is therefore regulated by the amount of the combined alkaloids found in the assay.

In reply to the regret that so costly a medicine as opium should be rendered more so by its being made a speciality, allow us to say that the charges with which we arraign opium are fundamental and serious. 1st. Its extreme variability in the constituents upon which its value depends. Dr. Squibb, in your Journal, tells us that it varies from 2· to 21· per cent. nearly. As long as the drug and prescription trade continues

*Since writing the foregoing, I have received the transactins of the Am. Pharm. Ass. for 1868, and I find I am corroborated in my views of this matter by the report of the Committee on the "Progress of Pharmacy." They say that it is the prevailing opinion among the members of the Brit. Pharm. Conf. that either the preparations of opium should conform in strength to morphia, or that morphia should be substituted for opium.

Morphia cannot take the place of opium, else it would have been done long ago, on account of its beautiful preparation, equable strength and convenience in prescription. Mr. Deihl, the Chairman, most truly and pointedly remarks that "the question demands great caution and thorough investigation before a definite conclusion can be arrived at. It certainly does not appear judicious to graduate the strength of opium preparations by the amount of morphia it may contain, for it contains besides a large number of other active principles which of necessity play an important part in its therapeutical action."

J. M. B.

to be a matter of dollars and cents there will be found those who in putting up their prescriptions will substitute, either ignorantly or designedly —if not exactly the 2 per cent.—at least the lower grades for the higher, which was meant by the prescriber.

The effect intended to be produced necessarily fails, and the physician possibly may be dismissed in disgrace, or, if from long acquaintance he possesses the confidence of the patient, the failure is attributed to any thing but its real source. Cannot the variability—you may query—in the strength of the opium be obviated or remedied? Certainly it can. But not without making it a speciality, as morphia already is, and a consequent increase of the cost; the very objection you make to our preparation.

The same objection with the same force obtains against the deodorized tincture of the Pharmacopœia; for you will certainly not insist that the tincture made from an opium of 7 per cent., morphiometrical strength, is uniform with the same made from a sample yielding 15 per cent. of morphia. Is not svapnia then, in this respect at least, better than the tincture?

The 2d charge is that there are many constitutions and *diseases* where opiates are required, but in which the crude opium and morphia cannot be tolerated. In many, if not all these cases, my combination of the hypnotic alkaloids of opium will have a most decidedly happy effect.

Very many over-conservative persons in the medical profession, whose experience and habits of prescribing are founded upon the results obtained from opium and morphia, will hardly look up over the edge of the groove of habit they have cut for themselves so deep as to be almost buried by it—hardly look up and believe that any possible improvement may be made in the administration of such an old-time drug as opium; to such indeed, the medical *speciality* svapnia hardly appeals, but to the younger, or at least more liberal minded ones, it does. Its good fortune as a new remedy, besides its intrinsic merit, will depend much upon its being kept —for a time at least—a special manufacture in the hands of those most interested in its success therapeutically and financially, so that the professional public may have the article exactly as I make it and made under my personal supervision.

I am not willing, at least until the reputation of the article based upon it as made by myself shall be fully established, to put in the power of every ignorant or unprincipled person claiming the titleof pharmacist to palm off on the professional public something called "svapnia" or purified opium, but which would in nine cases out of ten no more represent my article than the tinctura opii, as found in nine cases out of ten of the shops, represents that of the Pharmacopœia.

In regard to the cost of opium *being increased* by its being made a speciality, I think this inference is more an assumption than a reality, for it should be compared with other manufactures from opium, for instance morphia, one grain of svapnia being equivalent in anodyne power to one-third of a grain of morphia, and yet the svapnia is three-fourths less in price than morphia. Most respectfully yours, J. M. Bigelow.

It will be observed that the claims for svapnia are, that it owes its power to the meconates of morphia, codeia and narceia only, and that it is deprived of other alkaloids and hurtful ingredients by a process, or series of processes, which does not alter these natural salts. The extract thus produced is assayed,

and on the knowledge thus obtained this extract is diluted with inert soluble matter until its strength is reduced to that of opium of a 9 per-cent morphiometrical standard. But in the next paragraph, granting that the codeia and narceia vary in proportion like morphia, Dr. B. thinks this variation sufficiently uniform with that of morphia to regulate the strength of svapnia by the amount of all the alkaloids combined. Here is at once a cause of variability, inasmuch as abundant evidence exists of the unequal proportions in which these alkaloids are secreted in poppy juice.

What is said in regard to the variableness of opium as an argument for uniformity in svapnia is granted, but the range of percentages quoted from Dr. Squibb does not represent the regular market—but the history of opium past and present. We also grant that our argument against the price of svapnia applies equally to other improved preparations of opium, but not as we intended to explain it, and as we hope hereafter to do. The argument for keeping svapnia a speciality has a certain degree of merit;—it *is* true that novelties in pharmacy, even good novelties, are imitated by the unskilful, and for a time, especially if the manufacture is difficult, some public advantage may accrue from this primary uniformity, but we argue that in drugs like opium, or cinchona, or ipecac, all should be open and untrammelled in pharmacy. Did Sertürner patent morphia? or Pelletier and Caventon quinia and strychnia? But in these views business men do not care to enter. Finally, as a rebuttal of the charge of increased cost, Dr. Bigelow argues the price of svapnia is much cheaper than that of morphia, and says:—"*One grain of svapnia being equivalent in anodyne power to one-third of a grain of morphia, and yet svapnia is three fourths less in price than morphia!*

To reply to this let us return to our experiments and see what answer they have elicited.

Fifty grains of svapnia triturated with two fluidounces of water formed a cloudy mucilaginous solution, possessing a decided though mild odor of opium. This was thrown into 12 fluid-drachms of 95 per cent. alcohol, which occasioned a bulky whitish flocculent precipitate, in a light brown liquid which re-

tained the active part of the svapnia. The precipitate, collected on a filter well washed with alcohol and dried, weighed 40 grains. This substance is soluble in water, forming a cloudy solution, is precipitated by subacetate of lead, but not by the neutral acetate, is tasteless and probably is *gum arabic*. A repetition of this experiment gave the same result. It does not follow that all specimens of svapnia have the same proportion of gum, as Dr. Bigelow says the quantity of inert matter (gum), depends on the alkaloidal strength of the assayed extract, being less for the weaker and more for the stronger opium.

The alcoholic liquids carefully evaporated to dryness yielded ten grains of pulverizable extract, being 20 per cent. of the svapnia. This extract was dissolved in water and treated for morphia by Mohrs' process, as modified by Attfield, by boiling with hydrate of lime, acidulating with HCl, concentrating and precipitating with ammonia. The yield was so nearly two grains that it will be called that, which is equivalent to 4 per cent. of crude morphia, of a brown color, but reacting well with the tests. Not satisfied with this result, 50 grains of svapnia was dissolved in two fluid-ounces of water and the gum precipitated by subacetate of lead, and the excess of lead by diluted sulphuric acid and filtered. This was treated with hydrate of lime as before, filtered, acidulated with HCl, concentrated and precipitated with ammonia. After standing 24 hours it was collected on a filter, washed and dried, weighing 3 grains. It was now treated with non-alcoholic ether and then with boiling 95 per cent. alcohol till exhausted, leaving a brown insoluble residuum of 0·2 grain. The alcoholic solution evaporated yielded 2·3 grains of crystals of morphia, including a very little brownish uncrystallized portion, which is equivalent to 4·6 per cent. As by this process the codeia and narceia, if present, are rejected, no estimate could be made of them.

Svapnia is acid to litmus; 10 grs. treated with non-alcoholic ether afforded an acid solution. When evaporated a small varnish-like residue remained, decidedly acid, not crystalline, and containing a trace of odorous matter of opium. The acidity was not due to meconic acid.

Twenty grains of svapnia was triturated with 10 grains of

magnesia and sufficient water to form a creamy paste, allowed to stand half an hour to liberate the alkaloids, and then shaken with repeated portions of ether, ·735, till exhausted. On evaporating the ether in a tared test tube, the sides of the glass were coated with acicular crystals. The concentrated ethereal solution was alkaline to test paper. When the ether and moisture had disappeared the contents of the glass weighed 0·9 grain, consisting, besides the crystals, of some amorphous colored matter, amounting in all to 4·5 per cent. of the svapnia. This was treated with liquor potassæ until deprived of matter soluble in that liquid; the putty-like residue was then washed, dried, and dissolved in hot, strong alcohol, from which it crystallized with the greatest facility; a drop of this solution evaporated on a microscope slide, was found to consist of several distinct crystalline forms, the most abundant of which was narcotina prisms, well marked. Some of these from the crystallizing vessel, gave a deep yellow hue with NO^5, and when dropped on SO^3HO with a trace of nitric gave a deep red coloration. Shaken with water but little dissolved from the entire crystallization, and the solution was so feebly alkaline that a fragment of light red litmus paper required an hour to restore its blueness. The proportion of codeia was therefore very small. The third form of crystals were in stellæ of minute pointed prisms. Narceia being insoluble in ether, they were, of course, not that substance, and no attempt was made to determine their true character. Morphia was not detected among the first ethereal crystals. Assuming the ethereal alkaloids to amount to 2·5 per cent. of the svapnia, the whole alkaloidal matter here obtained is 7·1 per cent. exclusive of any narceia present; an approach to the 9 per cent. claimed by Dr. Bigelow. As Dr. Bigelow says his process avoids any chemical decomposition of the natural salts, and the presence of meconic acid in svapnia corroberates this view, it follows that he has no means of separating that portion of the narcotina existing in a saline state; hence it must remain in the svapnia. On the other hand, Dr. B. rejecting the standard of a fixed proportion of morphia, and adopting that of a fixed gross amount of all the alkaloids, it follows that this narcotina, which is very variable in quantity as a constituent of opium, displaces an equal

amount of valuable narcotic alkaloids, and may seriously impair the uniformity of the preparation.

Dr. Bigelow gives us no details of the method by which he claims to be able to isolate the meconates of morphia, narceia and codeia from the narcotina, thebaina, papaverina, cryptopia and other bodies of an alkaline nature in opium, yet in doing it he limits himself to neutral solvents. In the particular sample of svapnia examined all the opium extract was 20 per cent.; of this more than 8 per cent. was alkaloids; the balance bore the characters of extractive matter of opium that had become deepened in color by heat and air, as in ordinary extract of opium. The inference, therefore, is that by a series of solutions and evaporations with water and alcohol, as in Dr. Squibb's process for *Liquor Opii compositus*, a large percentage of the inert or objectionable matter is removed, and possibly ether (or benzine, as recommended by Mr. Ebert,) may be called in to aid and thus reduce the fifty per cent. of soluble matter of opium to 20 per cent. But the gross amount of alkaloids in good Turkey opium is more than 9 per cent., and to the extent that it is more, of course the proportion of this final extract in svapnia will be reduced. For instance, it is known that opium not unfrequently contains 12 and 14 per cent. of morphia, besides other alkaloids, and even as high as 20 per cent. has been found in rare instances. The proportion quoted by Gmelin, (Handbuch, xvi, 414), is 11·7 to 21·46 per cent. for true and pure Anatolia opium. Merck found 13·5 pr. ct. in fresh Smyrna opium. Dried French opium averaged, according to Guibourt, 17·7 per cent. of morphia, and the highest 22·9 per cent.

Gmelin gives the proportion of codeia as 0·73 per cent. (Mulder); 0·25 per cent. (Schindler); 0·25 per cent., (Merck).

The percentage of narcotina in Smyrna opium varies from 2 or 3 to 6 per cent., but is generally in larger proportion to the morphia in the India varieties. Of narceia our information is less complete, as well in regard to its identity and proportion as to its physiological and therapeutic characters. The extraordinary power attributed to the small portion of these alkaloids in svapnia needs confirmation.

Dr. Bigelow does not give his manner of assaying the purified

extract of opium. He says (Detroit Journ. Med. and Pharm., Jan., 1869), "I prefer Dr. Pereira's method to Dr. Squibb's." Dr. Pereira, so far as we are aware, only gives several processes of others; Dr. Squibb uses that of the U. S. P. for morphia. In view of what has been here shown, I believe it will be much safer to abandon his plan and give a simple morphiometrical standard, which should be ten per cent., as easily remembered and as representing an average pure Smyrna opium, throwing in the additional influence of such of the other alkaloids as may be retained.

If this assay is at all correct, it is difficult to understand how one grain of svapnia should be equivalent to one-third of a grain of morphia, as in this instance it contained less than one-twentieth of a grain. It is true this is a single specimen, and might by accident have been imperfect, yet it was an original package duly certified. But granting that svapnia contains 9 per cent. of morphia; there is then only one-eleventh of a grain in a grain of svapnia, which Dr. B. says is equivalent to one-third of a grain in effect. To what agency is the effect of the remaining two and a half elevenths to be attributed?

In conclusion, it is suggested that it would be well to introduce into the Pharmacopœia of 1870 a formula for a titrated extract of opium of 10 per cent. morphia strength, if it is found possible to construct a practicable and reliable process, and in view of such an object the best simple method of assaying opium might very properly form a subject for communication to the next meeting of the Association by several observers.

ON SOME PANAMA DRUGS.

By John M. Maisch.

I stated at the last meeting of the American Pharmaceutical Association that Mr. F. C. Herbruger, of Panama, had sent several drugs in use in that country, which were to be exhibited at that meeting, but did not arrive in time. Having received them since, I herewith furnish a description of the same, together with the brief notes of Mr. Herbruger and the details of some experiments calculated to throw some light on their be-

haviour. Mr. Herbruger has omitted to state their botanical origin or to send specimens of the plants from which they are obtained; we hope that with his aid the obscure origin of several Central American drugs may be ascertained.

Caranna hedionda, a gum resin much used here for external application in bruises, cuts, &c., is a very popular remedy in this country; it is mentioned in the U. S. Dispensatory.

The description on page 1486, 12th edition of the Dispensatory, agrees precisely with that of Geiger, as contained in his Handbuch der Pharmacie, published 1830, but not with the description on page 25 of his Pharmacopœa Universalis, published 1835, which is as follows:

Caranna, Gummi (Resina) Carannæ, Achariari. *Caragne* (French). A resin from South America, enveloped in the leaves of a reed; said to exude from *Bursera gummifera*, Lin., according to the opinion of others from *Amyris* (*Icica*) *caranna*, or rather *Cedrota longifolia*, *W.*, a tree of the natural order Terebinthaceæ. Pieces grey-brown, green-blackish, diaphanous at the margin. When fresh, tenacious, like pine resin; when old, rather fragile, with a shining fracture; odor slight, resembling ammoniac and tacamahac, taste bitterish, unpleasant; fused by a gentle heat it gives off a strong not unpleasant odor. Caranna resembles the resin called Balsamum Acouchi, Aracouchinis. Alouchi.

Wiggers refers caranna to *Bursera acuminata*, Willd., s. *B. gummifera*, Jacq., and describes, after Martius, three kinds which are probably derived from different trees, namely: 1st, square pieces with layers of, and wrapped into, leaves of a Laurus, with a waxy lustre upon the fracture, dull yellow greenish in thin layers, becoming soft by the warmth of the hand and mouth, and resembling guaiacum in taste; 2d, similar pieces of the size of a hand, softer, and wrapped in leaves of the musa; 3d, dark dirty green uneven pieces, 3 to $4\frac{1}{2}$ inches wide, 3 to 10 inches long, wrapped in leaves of Maranta lutea, with little lustre, small white dots and mixed with fragments of leaves and wood, not softened by the hand, inodorous, very sandy and with little taste.

Lindley, in his Flora Medica, says: *Icica Caranna*, H. B. K., yields the fragrant balsamic substance called Caranna, according to most writers. Dr. Hancock is, however, of the opinion

that the Aniba of Aublet, or Cedrota of Schreber, the affinity of which is unknown, really produces it.

Redwood's supplement to the Pharmacopœia follows the foregoing statement.

The oldest reference to the drug in question which I have found in works that I could consult, is in Encyclopædia Britannica, published in 1796, as follows: Caranna or Karanna, a very scarce gum which comes from New Spain; it is said to possess many extraordinary medical virtues, but the present practice takes no notice of it.

The Cyclopædia, &c., by Abraham Rees, published in Philadelphia (time ?), has a more extended notice, which appears to have been compiled from some older works on Materia Medica and the accounts of travellers; we select the following passages: Caranna, brought from some parts of the West Indies, as Carthagena and New Spain. The trees from which it runs are like the palm tree. When it is fresh it is white, but as it grows stale it becomes greyish inclining to green, in which condition it is sent to Europe, where the white is seldom to be met with. It is brought in lumps wrapped up in leaves. To be of the best quality it must be soft, of a pleasant aromatic smell and as white as snow.

I have not been able to procure Dr. Hancock's paper, which is published in the Edinburgh Philosophical Journal 1829, Oct., 233, so that I cannot say upon what grounds he bases his assertions of the origin of caranna; nor the account of Monardes, quoted by Guibourt, from which it appears to have been first exported to Europe about the year 1560. It comes from the neighborhood of Carthagena or Nom-de-Jésus, has the color and odor of tacamahac, but the latter is stronger; is shining, oleaginous and tenacious.

Guibourt, in Histoire Naturelle des Drogues simples, Paris, 1850, III, page 487, states that caranna is said to come from a Mexican tree which Hernandez calls arbor insaniæ, caragna nuncupata, and that it comes in masses enveloped in the leaves of a reed. Guibourt has not seen any authentic specimens of caranna, but describes three samples under that name in his possession: 1st, irregular pieces of the size of a nut, hard, greyish

black, opaque, fracture dull, readily fusible, completely soluble in alcohol, when rubbed, of an odor intermediate between tacamahaca and pine resin; 2d, a larger mass of 500 grammes, flattened, black-green, opaque, fracture granular and glossy, odor between elemi and pine resin; 3d, tears about the size of beans, flattened, surface unequal, glossy, deep black green; fracture unequal, vitreous, in thin pieces transparent, odor strong but less agreeable than tacamahaca, becoming soft between the teeth, taste somewhat resinous, neither acrid nor bitter, the alcoholic tincture reddish, the undissolved portion consisting of earthy matter and a deep green substance giving off an aromatic odor on being heated. A fourth kind, the *Amboina caranna* of Rumphius is likewise described.

On comparing the different descriptions as given above, it becomes evident that different exudations have been described under the name of caranna, and it is not improbable that in various portions of Central and South America this term is applied generically. This supposition appears to be verified by the specimen sent by Mr. Herbruger, which does not entirely agree with any of the above descriptions. I received it in a tin can. It is of the consistence of a rather soft pitch, but far less tenacious; the surface is of a brown-blackish green color; the interior is of a dirty fawn color inclined to green, intermixed with streaks and patches of a brown red substance, having a somewhat pulverulent appearance; exposed to the air it rapidly darkens, first assuming a liver color and finally dark brown-green; the interior portion is perfectly opaque, but with the change in color becomes transparent in thin layers, which, when quite dry or nearly so, are of a brown red, almost ruby color. Its odor has at first a faint resemblance to ammoniac, but is mainly almost identical with myrrh, being however much stronger; its taste resembles that of myrrh, being rather more aromatic and much less bitter; when chewed it feels somewhat gritty between the teeth, which is due to dust and earthy matter, plainly visible when thin transparent layers are viewed under the magnifying glass.

100 grains of caranna were treated with alcohol and the insoluble portion was thoroughly washed with alcohol; after drying, the residue weighed 25 grains and consisted of small chips of bark, fragments of leaves, lumps of a red-brown earthy matter,

not altered by heat and containing much iron, and of fine brown and brown-black earth. The tincture, measuring four ounces, is of a yellowish brown color, much darker than tincture of myrrh, possesses an acid reaction and the characteristic odor; diluted until it is almost colorless, a red color is produced on the addition of nitric acid; if the tincture is mixed with water it becomes milk-white, and the addition of nitric acid now produces a rose color which is very permanent. That tincture of myrrh is colored red by nitric acid is well known; if the acid is added after the previous addition of water, nitric acid produces a similar color; on standing for some time a brown precipitate is separated and the turbid supernatant liquid assumes a rose color.

The tincture slowly reddens blue litmus paper and on evaporation leaves a resinous mass of a ruby brown color, perfectly transparent, readily fusible and soon becoming brittle on exposure. This residue dissolves readily and completely in alcohol, ether, chloroform and oil of turpentine, and is partly soluble in caustic alkalies, to a larger extent in the fixed alkalies than in ammonia.

Caranna, when continually triturated with water, is to a small extent disintegrated and forms an incomplete emulsion, which soon deposits all the resinous matter.

From its properties and behaviour it admits hardly of any doubt but that the caranna of Panama originates from a tree belonging to the natural order of Terebinthaceæ, but the genus and species from which it is derived is not clearly established yet.

It is mentioned above that Hancock refers this oleoresin to the Aniba of Aublet; but this author, who always records very carefully the exudations of the trees, omits to state in this case that the aniba yields an exudation; he simply says: "Lignum trunci aromaticum citrinum;" and it is scarcely probable that this tree should yield the caranna and he not have been informed of the fact, while he carefully records many facts connected with the wood.*

* Cet arbre est appelé Bois de Cedre par les habitans du comté de Gêne. On en travaille le bois pour faire des piroques, et ils prétendent que le tronc pourrait servir à faire des mats de navire.—*Histoire des plantes de la Guiane francaise. Par M. Fusée Aublet*, 1775. *Tom. I. p.* 328.

In Traité général de Botanique par Maout et Decaisne, Paris, 1868, p. 316, it is stated: "L'Icica altissima donne la gomme Carana qui remplace en Amerique le baume de Giléad. Aublet, however, states, on page 342, that the wood of this tree is called cedre blanc and cedre rouge, according to its shade of color, that it is light, and when dry floats upon water, and that articles made from it last very long; further, he says, "e cortice inciso succus balsamicus et resinosus, odoris grati stillat;" but, though he usually records carefully the vulgar names, he does not mention the name of caranna.

Among the species of Icica not sufficiently known, DeCandolle enumerates *I. Carana*, HBK., and states: "Cortex fundit gummi albidum." Kunth* does not give any more information on this subject; the larger work of Humboldt, Bonpland and Kunth, Nova Genera Americana, I have not been able to consult. The tree was found near the river Orinoco.

That *Bursera gummifera*, Jacq., should yield caranna, is not very probable. Grisebach† says of this plant: "A lofty tree, from all parts of which gum resin exudes on the slightest touch." It occurs on the Bahama Islands, Jamaica, Dominica, St. Vincent, Cuba, Panama, Venezuela. If, therefore, the caranna of the Central or South American Continent were obtained from this tree, it could also be had from the islands named, and would undoubtedly have been exported from there at a time when its virtues were so highly extolled in Europe, and when it was officinal in the pharmacopœias‡ of several of the European States, some of which had possession of those very islands and countries in which this tree was at that time known to grow. Moreover, Maout and Decaisne§ refer to this tree the resin Chibou or Cachibou, which coincides with Guibourt's statement in Histoire Naturelle, &c., iii, p. 479, who also mentions that this resin is often imported to France under different names and with particu-

*Sinopsis plantarum quas in itinere ad plagam æquinoctialem orbis novi collegerunt Al. de Humboldt et Am. Bonpland. Parisiis 1825. Tom. iv.

† Flora of the British West Indian Islands. London, 1864, p. 173.

‡ Pharm. Wirtembergica, Ed. 6, 1798. Pharm. Gallica, Paris, 1818. Pharm. Hispanica, Ed. 3, 1803. Pharm. Lusitanica, Lisbon, 1825.

§ Traité général de Botanique.

lar characters, all of which are, however, different from those of the caranna in my possession. Nor has this latter oleoresin any resemblance with aracouchini, as stated by Geiger, which, according to Aublet, comes from Icica Aracouchini, is yellowish, balsamic, aromatic, liquid like turpentine, and retains its fluidity for a long time.

In reviewing all these statements in regard to the origin of caranna, it is obvious that the specimen in question is neither derived from *Aniba guianensis*, Aubl., *Icica altissima*, Aubl., or *Bursera gummifera*, Jacq.; to determine its origin, I hope to be favored by Mr. Herbruger with all parts of the plant necessary to establish its identity.

Leche de Sande or Resina de Sande. When it first exudes from the tree it is a thick milky juice, resembling milk of caoutchouc, but by exposure to the air and age it gradually becomes a solid. It is extensively used in this country as a plaster, in enlargement of the spleen, which it is said to cure. This resinous mass, as received, is a soft solid of about the consistence of balsam of tolu. Externally it is nearly black, internally of a grayish white, which exposed to the atmosphere rapidly darkens. Its odor is like that of crude india-rubber, and it is almost devoid of taste. It fuses very readily, the black portion floating on the surface and leaving, after congealing the lower portion, a uniform dark gray color. It takes fire with some difficulty, and burns with a bright luminous flame. It is devoid of elasticity both before and after fusion. Chloroform, ether and oil of turpentine readily dissolve the entire mass, with the exception of the black portion, which is left behind in a finely flocculent form; the filtered solutions are nearly colorless, and leave, on spontaneous evaporation, a yellowish gray mass, separating at the same time some black flocculent matter. Alcohol behaves similar to the solvents mentioned; but the solution is effected with more difficulty. The undissolved portion, after having been washed upon the filter with the menstruum, is in flocks without adhesiveness. I am not able to give its origin.

Cativo de Mangle resembles Venice turpentine; it is used in this country for catching flies, for which purpose it is spread on paper, and the flies, on alighting, firmly adhere to it. It is also used as

a coating for the bottoms of canoes and small vessels, being boiled with quick lime and applied warm, when it soon becomes a hard and horny mass. This substance is a thick liquid of the consistence of turpentine, a brownish color, turbid but without any sign of crystallization, in thin layers whitish and merely translucent; its odor is slight, reminding of rancid butter; taste slight. On the application of heat it fuses to a thin brown, perfectly transparent liquid, but loses its transparency again on cooling.

It is soluble in ether and oil of turpentine; with alcohol it forms a turbid solution, which is rendered milk-white by water, separating at the same time an oily looking liquid at the surface. Solution of ammonia and potassa readily yield with it almost transparent solutions which, on agitation, foam like suds. Boiled with milk of lime it becomes hard on cooling. Held in the flame it burns with a bright sooty flame.

It is not improbable that this is obtained from *Brusera acuminata,* Willd., which by modern writers is united with *B. gummifera,* Jacq. DeCandolle* says: "Fundit oleam quoddam essentiale concretum flavum." Another species of the same natural order, *Hedwigia balsamifera,* Swartz, yields, besides a finely flavored resin, a thick liquid of the consistence of copaiva, called in France baume à cochon.

A substance resembling gutta percha. This came in a flattened circular cake, about 5½ inches in diameter and 2½ inches thick, externally of a dirty brown yellowish color, internally white with streaks of dirt, showing that the mass while liquid has either been collected in ditches in the ground, or that while in suitable vessels it had been exposed to dust and dirt, and when nearly hard the mass was formed into a cake, the dirty surface being placed inside. Near the edges, where the mass had been longest exposed to the atmosphere, the fracture is smooth and shows veins of a dull brown-yellowish color which, cut with a knife, exhibit a waxy lustre. Between and outside these veins the fracture is finely uneven and almost mealy. The mass is without odor and taste; held between the teeth it gradually becomes pliable without adhering to the teeth. Carefully heated it

* Prodromus, ii, p. 78.

softens sufficiently to allow of being moulded; at a higher heat it fuses partially, giving off white fumes with very little odor, at the same time becoming black; while cooling it is rather adhesive and possesses considerable elasticity, both qualities being retained to a certain degree for weeks. When approached to the flame, it takes fire and burns with a bright sooty flame. Alcohol has no effect on it; ether and light coal oil (so-called benzine) dissolve the white portion, leaving the yellowish part and impurities behind; oil of turpentine furnishes a turbid solution and converts the yellowish part into a thick oily liquid; chloroform and bisulphide of carbon yield milk-white emulsions without effecting clear solutions.

The substance, if obtainable in sufficient quantity, could undoubtedly be used in the arts for many purposes in place of gutta percha.

EMULSION OF COD-LIVER OIL.

To the Editor of the American Journal of Pharmacy.

We send you the following formula we use in our store for our Emulsion of Cod-Liver Oil, for publication in the pages of the American Journal of Pharmacy.

Syrup of sucrate of lime f℥i, of a strength representing six grains of the hydrate of lime.*

Water, f℥v,

Cod Liver Oil, f℥ix,

Essential oil of almonds, six drops. Mix.

Slight modifications are sometimes required on account of changes of season and other causes.

We remain yours respectfully,

April 20th, 1869. J. MILHAU'S SONS.

GLEANINGS FROM THE GERMAN JOURNALS.

By JOHN M. MAISCH.

Persulphide of hydrogen.—A. W. Hofmann has discovered a crystalline compound of this body with strychnia. If this alkaloid is dissolved to saturation in cold alcohol, an alcoholic solution of sulphide of ammonium, containing free sulphur, will in a

* See this Journal, 1867, page 336.—EDITOR.

short time separate from it lustrous crystals; after twelve hours the sides of the glass vessel are covered with beautiful orange red needles, often a centimeter in length, which are obtained pure simply by washing with cold alcohol; they are insoluble in water, alcohol, ether and sulphide of carbon. From the elementary analysis, the following formula is calculated: $C_{42}H_{22}N_2O_4, H_2S_6$. Treated with concentrated sulphuric acid, the crystals lose their color, and on the addition of a little water sulphate of strychnia is dissolved, and colorless transparent oily drops of persulphide of hydrogen are separated, which are slowly decomposed into sulphur and sulphide of hydrogen.

Quinia, cinchonia and brucia do not yield an analogous compound. An alcoholic solution of 2·03 grm. strychnia yielded after twelve hours 2·287 grm. of the red crystals = 87·2 p. c. of the theoretical quantity. The author suggests that this compound might probably be serviceable for obtaining pure strychnia from mixtures, &c.—*Chem. Centralblatt*, 1868, *p.* 846, *from Ber. d. deutschen chem. Gesellsch.* i, 81.

Coloring matter of Claret.—A. Phillips states that sesquichloride of iron imparts to the juice of black cherries, huckleberries and mallows a violet color with a reddish or bluish tint. Pure claret, on the contrary, is colored red brown. The amount of free acid in the wine influences the shade of the color. The bluish grey color imparted by artificially colored wines, according to Boettger, to sponges previously treated with muriatic acid, is probably due to their retaining a trace of ferric chloride. —*Ibid.*, *p.* 864, *from Journ. f. prakt. Chem.* ci, 320.

Estimation of potassa for technical laboratories.—Plun Rett proposed bitartrate of soda for this purpose. Gladisz and Balo found that, from pure solutions, the precipitation of the potassa is the more complete, the greater the amount of the reagent added. The potassa of 5 c. c. of a solution containing 10 p. c. saltpetre was completely precipitated by 50 c. c. of a saturated solution of bitartrate of soda, while on using 10 c. c. of the former and 20 of the latter solution, 2·5 p. c. less than the amount of saltpetre was found. Cream of tartar is more soluble in water and in nitrate of soda than in bitartrate of soda. The

objection to the process lies mainly in the difficulty of washing out completely the bitartrate of soda from the precipitate.—*Ibid.* 879, *from Ibid.*, ciii, 495.

Preparation of hydriodic acid.—Dr. Cl. Winkler uses a moderately concentrated solution of iodine in sulphide of carbon contained in a cylinder kept cool; a quantity of water is poured upon the solution, varying in proportion to the strength of the acid desired, and sulphide of hydrogen is then passed into the iodine solution. The hydriodic acid generated is absorbed by the stratum of water, while the sulphur is dissolved by the sulphide of carbon; the reaction is complete when the violet color of the solution has passed into a pure yellow. The aqueous solution is then heated to expel the dissolved sulphide of carbon. *Ibid.* 816, *from Ibid.* cii, 33.

Preparation of cylinders for use with Drummond's light.—Dr. Jos. Philipps, of Cologne, gives the following directions:

Lime cylinders are obtained by burning pieces of white Carrarian marble, free from iron, between coke for an hour to an hour and a half. After the carbonic acid has been completely expelled, the cold lime is sawed into pieces of about 7 centimetres in length and 15 m. m. in thickness, which are preserved between powdered lime. The cylinders are strong and give a bright light.

For magnesia cylinders freshly burned magnesia is mixed with water to a stiff paste, which is rapidly put into suitable unsoldered moulds of sheet iron of the thickness of a thumb; by striking the moulds perpendicularly upon a hard surface, the air is expelled from the mass, which in a few minutes becomes warm, when it is put into a warm oven, where it soon becomes very hot. After about an hour the cylinders may be removed from the moulds; they give a brilliant light, but possess less strength than the former.

Chloride of magnesium cylinders are made in a similar way; the magnesia is first mixed with muriatic acid to form a thick liquid, when enough magnesia is rapidly added to form a stiff mass. When finished these cyclinders resemble porcelain and yield a bright light, but give off disagreeable fumes when used. *Archiv der Pharm.*, 1869, *Jan.* 7, 8.

SULPHUROUS ACID.

By C. Umney, F.C.S.

The introduction into the British Pharmacopœia of remedial agents of whose therapeutic value comparatively little was previously known, has been the means of giving to medical practitioners new material for research; and has undoubtedly resulted in promoting investigations which otherwise would never have been attempted.

The action of sulphurous acid, a remedy of antiquity now placed in the Pharmacopœia, had been much less studied than it apparently deserved, for recently most beneficial results have followed its use in affections of the throat, by means of the spray producer, as recommended by Dr. Dewar,* whose experiments with this body in various forms of disease seem to have been most successful; also used to some extent by Mr. Hamilton, Surgeon to the Liverpool Infirmary, in cases of typhoid or enteric fever;† the results of whose experiments have been confirmed by Dr. Jones of Liverpool.‡ The latter gentlemen both used a solution *professedly* of the Brit. Pharm. strength; Dr. Dewar, a more dilute solution, not exceeding 4 per cent. of real sulphurous acid.

For some time past I have observed that the solution of sulphurous acid, as supplied by manufacturers, variously labelled "Sulphurous Acid, Solution of Sulphurous Acid, Sulphurous Acid, B. P.," has very much differed from the acid as described by the Pharmacopœia, which is defined as having a spec. grav. of 1·040, and containing 9·2 per cent. of real sulphurous acid.

The commercial solutions I examined varied in strength from 2 to 6 per cent.; none approached the high standard of the Pharmacopœia.

It was quite obvious that this deficiency did not arise from any attempt to make a preparation of inferior quality with such a body as sulphurous acid,—used as it is daily in the arts in enormous quantity as a cheap bleaching agent, and moreover as

* Dr. Dewar's Pamphlet on Sulphurous Acid.

† 'Lancet,' vol. i, 1869, p. 45.

‡ *Ibid.* p. 126.

in many laboratories it is merely a by-product,—but rather from some practical difficulties in making such a strong solution on the large scale.

The following experiments were made with a view to determine the strength of the acid that could be obtained by the officinal process, and to ascertain the circumstances most favorable to its production:—

1. Oil of vitriol was reduced in a flask by charcoal, the resulting gas after passing through the wash-bottle was allowed to slowly bubble through the water intended for its solution, this being kept at the temperature of the laboratory (65° to 70° F.); after eight hours nearly 2 per cent was found to have been dissolved, the solution having a spec. grav. of 1·009 at 60° F.

2. The current of gas produced, as in previous experiment, allowed to pass slowly through water for 36 hours. Solution nearly 6 per cent., spec. grav. 1·030.

3. Gas passed through water slowly under a pressure of one lb. (2 inches mercury) for 8 hours under same conditions as before. Solution 5 per cent., spec. grav. 1·028.

4. Solution made under 2 lbs. pressure (4 inches mercury) for 8 hours, indicated 5½ per cent. Spec. grav. 1·030. (This clearly showed the advantage of using pressure, the solution of the gas being more readily affected.

5. Iced water was then kept around the receiver; the gas was slowly passed through for 16 hours, resulting in a solution of nearly 9 per cent., and 1·045 spec. grav.

6. Increased pressure repeatedly tried, the result being invariably the fracture of the generator.

Not having other available apparatus at hand, and as I had obtained much beyond the spec. grav. of the Pharmacopœia solution, and had almost approached its strength,—from want of leisure I did not continue my research.

The various solutions carefully examined* with a volumetric

* In weighing the acid for examination, I always counterpoised in the beaker in which the acid was to be weighed about one ounce of cold water, as I found this prevented the loss of gas of the strong solution which invariably resulted if weighed alone, the acid being taken out with a pipette, the analysis of each specimen was thus effected rapidly—certainly in three or four minutes.

solution of iodine of the strength indicated by the Pharmacopœia, $\frac{1}{10}$ of an atom (12·7 grains) in 1000 grain-measures (the accuracy of the iodine solution being confirmed by the volumetric solution of hyposulphite of soda), gave results which, combined with the various specific gravities of the solutions described, could only point to one conclusion, viz., that the Pharmacopœia solution did not coincide in its described spec. grav. as compared with its percentage of acid; for a solution of 1·040 indicated but 7·8 per cent. of real acid, instead of 9·2 per cent., or in other words, if the spec. grav. was correct, the *strength* was an error, or *vice versâ*.

The Brit. Pharm. 1864 directed an acid of 1.040 spec. grav., but only indicated the numbers of measures of iodine solution required for its saturation as equivalent to 8·3 per cent.

This, therefore, is an approximation to the result I have obtained.

In an excellent review of the officinal acids by Mr. C. H. Wood, article "Sulphurous Acid,"* it is said, "This acid is of the same strength, and is prepared in the same manner as before."

It is certainly of the same specific gravity, viz., 1·040, but I find by calculation that 88 measures of iodine solution less in 1·000 measures are indicated than by the B. P. 1867, an equivalent of nearly 1 per cent. real acid. The two solutions of the two pharmacopœias, although of the same specific gravity, cannot, then, be of the same strength.

The manufacture of the acid on the large scale, up to even the highest point to which I have arrived, is next to impossible. I will quote the remarks of a chemist, in a letter upon this subject to me, who is in the habit of making tons yearly. He says, "I obtain a solution of 1·030 easily (comparatively); and in cold weather and a slow current of gas, ordinarily I get acid from 1·025–30."

Through the kindness of Messrs. May and Baker, Battersea I have been favored by their chemist, Mr. Tyrer, with the result of two experiments made on a very large scale, and under the most favorable circumstances.

* Pharm. Journ. Vol. IX, page 64.

A charge of 200 lbs. charcoal and 140 lbs. oil of vitriol was placed in a still of 120 gallons' capacity; the gas washed and passed through a series of Woulfe's bottles, the exit pipe from the last bottle being weighted at 6 lbs. pressure. In temperate weather by this method an acid from 1·033 to 1·035 con be produced, and by passing through a second charge of gas from a fresh supply of oil of vitrol, a solution of 1·036 to 1·038 can be produced,—but this only on cold nights and working very slowly; if the gas is passed rapidly, more is lost than gained.

The second experiment was but a modification of this, substituting at the last of the Woulfe's bottles a pressure produced by a column of water of 12 feet (6 lbs. pressure), with plugs inserted at 3 feet intervals, so that by withdrawing them the pressure could be regulated. This means of producing pressure was adopted in preference to the valve, which invariably corroded, as it gave a ready means of allowing the carbonic acid and carbonic oxide to escape. The result, however, was an acid of only 1.038 specific gravity, as in previous experiment. To work regularly at this amount of pressure would be anything but desirable.

The U. S. Pharm. orders a solution of 1·035 specific gravity; no strength is however named, neither is a process given for its estimation; it does, however, direct the solution to be put into half-pint bottles, well stoppered, and kept in a cool place. In the 1837 edition of the French Codex, a solution of thirty-seven volumes is directed, the specific gravity described as 1·053. The gas, however, is made by the reduction of oil of vitriol with mercury, which gives a product nearly pure. This is almost identical with my result, taking into consideration the quantity of carbonic acid necessarily dissolved with the sulphurous acid under pressure.

It cannot for one moment be doubted that a solution of much greater strength than any here indicated could, in the experimenting room, under certain circumstances, be made without great difficulty (using copper and sulphuric acid to obtain the sulphurous acid); for we have the unquestionable authority of Bunsen upon the subject, who is thus cited by Miller, in his 'Elements of Chemistry:'—"Water will absorb at 32° F., 68·8 volumes; at 59°, 43·5 volumes; and at 75°, 32 volumes."

Now the Pharmacopœia solution (which is about 37 volumes) was designedly made nearly one of saturation at the average summer temperature of this country, and, if one may be excused for making a guess, was described from calculations made from the above data of Bunsen's, and not practically worked out to see whether such a solution could be ordinarily obtained in the manufacturing laboratory without chance of failure, and, when made, be kept without great alteration in the various stages it would have to pass through, even if only from the manufacturer to the wholesale druggist, then to the pharmacist, in whose store it might remain for a year or more, being, perhaps, placed in a temperature many degrees above the point at which it was saturated, thereby causing expansion, liberation of gas, and inconvenience.

It may be here worthy of note, that a solution of sulphurous acid of any great strength decomposes into sulphuric acid in partially filled bottles four times as rapidly in a light green bottle as when kept in one of dark blue,—the maximum rate being in six months equivalent to 1·436 per cent. sulphuric acid. The following table will give, I think, sufficiently accurate for medicinal purposes, the specific gravity of solutions* from 1 to 8 per cent., made by the officinal process:—

Per cent. of SO_2	Specific gravity.	Volumetr. Sol. of Iodine, B. P.
1	1·005	108·6
2	1.011	217·3
3	1·017	326
4	1·022	434·6
5	1·027	543·3
6	1·032	652
7	1·037	760·8
8	1·042	869·5

The stronger solutions are most powerful, causing not a little inconvenience in transfer from one bottle to another, from the quantity of irrespirable gas given off; and it is to be doubted, had an acid been used of Brit. Pharm. strength, or even one approaching it, in the experiments of Mr. Hamilton and Dr. Jones, as described in the 'Lancet,' whether one-drachm doses to chil-

* Made by dilution of the stronger solutions with water.

dren and three-drachm doses to adults, every four hours, could have been given without ill effects. It is more probable that a solution, as ordinarily found in pharmacy, of about 2 or 3 per cent. was used.

I should suggest that a solution of 1·027 specific gravity, containing 5 per cent. by weight of real acid, be substituted for the present officinal solution at the earliest opportunity, such a solution being sufficiently strong for medicinal purposes. Their would then be no difficulties attending upon the production of acid of such strength, neither would there be the least justification for the entire absence of such a solution from pharmacy.

We should thus be giving the remedy a fair trial, and by its medicinal merits alone it would either retain its place or be expunged from future pharmacopœias. This communication, I trust, will prevent any blame from being attached to the pharmacist, if such a valuable remedy should undeservedly be brought into disrepute.

Laboratory 40 *Aldersgate street, E. C.*

In reply to a question from the Chairman, Mr. Umney said, he thought an acid containing 5 per cent. would be strong enough for use in medicine.

Dr. Attfield thought that if an acid of the strength indicated in the Pharmacopœia was really required, it would be necessary to obtain it by passing the pure gas into water, and not the two gases resulting from the action of charcoal on sulphuric acid.—*London Pharm. Journ., March*, 1869.

NOTE ON SULPHATE OF POTASSIUM IN ERGOT.

By Professor Attfield.

In the official process for *Extractum Ergotæ Liquidum*, B. P., powdered ergot, freed from oil by ether, is exhausted by warm water, the mixture filtered, the filtrate evaporated to a low bulk, spirit of wine added, the mixture set aside for coagula to subside, and, after an hour, filtered and bottled for use. On recently carrying out this process, a correspondent (Mr. Romans, 55 Westgate, Wakefield) tells me that after adding the spirit of wine he had occasion to set the mixture aside during a night

instead of for one hour, and on the following morning found the walls of the bottle lined with crystals. These he collected, purified, and forwarded to me, with the request that I would ascertain their nature, and thus be enabled to say whether or not their separation involved deterioration of the extract. They were found to be the inert salt sulphate of potassium.

This note is published for two reasons: first, to assure any pharmacist who may have met with these crystals that their presence or absence in ergot or its preparations is of no therapeutic importance; second, to draw attention to a possible, perhaps a general constituent not previously noticed by chemists who have analysed ergot. Mr. Romans tells me the crystals amounted in weight to about 3 per cent. of the ergot employed. —*London Pharm. Journ., March*, 1869.

NOTE ON AROMATIC SULPHURIC ACID.

By Professor Attfield.

A short time ago I was asked whether or not the official* aromatic sulphuric acid contained sulphovinic acid. Aromatic sulphuric acid is made by mixing gradually 3 volumes of sulphuric acid with 40 of rectified spirit, and then adding certain aromatics (cinnamon and ginger). Sulphovinic acid is also made by mixing sulphuric acid and spirit, but the volumes should be equal, the alcohol as nearly absolute as convenient, a temperature considerably above that of boiling water applied to the mixture, and the material allowed to digest together for twenty-four hours: even then the whole of the alcohol is not converted into sulphovinic acid. From these facts we should infer that sulphovinic acid is not formed to any considerable extent in making aromatic sulphuric acid. Still there is some rise of temperature in mixing 3 volumes of sulphuric acid with 40 of

* The Pharmacopœia and all in it is official (*office*, Fr. from L. *officium*, an office). There are many things which in pharmacy are officinal (Fr. from L. *officina*, a shop) but not official. To restrict the word *officinal*, first, to the contents of a pharmacist's shop, and, second, to that portion of the contents which is Pharmacopœial is radically wrong, and in future should be avoided.—J. A.

rectified spirit, hence the production of a small quantity of sulphovinic acid might be considered possible. To ascertain whether or not this were so, a portion of the diluted spirit was treated with carbonate of barium; the sulphate of barium separated by filtration, washed with acid and water, dried and weighed. The filtrate, which would contain sulphovinate of barium, if sulphovinic acid had originally been present, was evaporated to a small bulk over a water-bath. The weight of the sulphate of barium corresponded with that of the sulphuric acid, whence it was obtained; indeed, it was apparently somewhat greater—a result due, probably, to loss of alcohol during manipulation, and a corresponding increase of strength of the diluted acid. The filtrate from the sulphate of barium finally dried up without giving any sulphovinate of barium. These experiments were repeated, after the mixture of sulphuric acid and spirit had been set aside for fourteen days, with the same result; indicating that sulphovinic acid is not formed after a time. They were also repeated after due maceration with the aromatics, but, again, no sulphovinic acid was obtained. We are, therefore, now in a position to state that aromatic sulphuric acid, when made according to the Pharmacopœia, contains no sulphovinic acid.—*London Pharm. Journ., Feb.*, 1869.

NOTE ON THE ADULTERATION OF PRECIPITATED SULPHUR.

By Professor Attfield.

Why is precipitated sulphur still usually adulterated to a scandalous extent with what may be termed plaster of Paris,—hydrous sulphate of calcium ($CaSO_4,2H_2O$)? Nearly every book on chemistry and materia medica states that instead of being made by mixing hydrochloric acid and polysulphide of calcium, it is often prepared by the reaction of sulphuric acid and the sulphur salt, the result being precipitated sulphur (identical, so far, with the officinal article—*Sulphur præcipitatum* B. P.), but mixed with more than an equal weight of the calcareous mineral compound, which when well dried constitutes plaster of Paris. Every chemist and druggist therefore knows, or ought

to know, that precipitated sulphur is more likely to be impure than pure, and yet the employment of the adulterated variety seems on the increase. From the following table it will be seen that out of eight samples which I recently purchased (for quite another purpose) within an area of a mile, only one was pure, one contained nearly half its weight of calcareous matter, and each of the others was actually two-thirds impurity and only one-third precipitated sulphur. In explanation of this condition of things, the statement is commonly made that the public has become so accustomed to the satiny appearance of the impure article (due to the selenitic character of the adulterant) as to regard the pure with suspicion, often refusing to purchase it. I cannot believe in the general application of this explanation. The public, surely, places too much confidence in a pharmacist's knowledge of drugs to persist in refusing a pure in favor of an impure chemical. Therapeutists cannot hope to arrive at a rational system of medicine unless the followers of pharmacy combine to crush the practice of adulteration. Precipitated sulphur is, doubtless, an exception to the general rule that drugs are less adulterated now than formerly, but clearly there is room for much improvement.

No.	Impurity in 100 parts of the "Sulphur."
1	66⅔
2	43⅓
3	66⅔
4	66⅔
5	66⅔
6	66⅔
7	pure
8	64⅔

Chemists and druggists, their customers, and medical practitioners, should refuse to purchase any precipitated sulphur which leaves a white ash when a little is burnt off on the end of a table-knife or spatula. (The sulphur does no more damage to the steel than a rub on a knifeboard will remove.)

Mr. Hanbury remarked that the only formula given in the Pharmacopœia for milk of sulphur produced this impure result.

Dr. Redwood said that was rather an important point. He was far from being prepared to advocate the use of milk of sulphur in preference

to precipitated sulphur, but, nevertheless, when the fact of the former preparation, containing a large quantity of sulphate of lime, was brought forward as an imputation on pharmaceutists for selling an adulterated article, he must take exception to the charge, and say that he did not admit it to be an adulteration. As stated by Mr. Hanbury, the only officinal process for making milk of sulphur was given in the London Pharmacopœia of 1721, and practically produced a mixture of sulphate of lime and sulphur, which was obtained by precipitating with sulphuric acid and a sulphide of calcium. It was quite possible, but by no means certain, that pure sulphur would answer the desired purpose better. As he had stated, with reference to some other preparations, it was sometimes found that an admixture of foreign matter, so far from injuring the action of a remedy, promoted its efficacy. This was said to be so with reference to the action of the resin of jalap and other medicinal substances; the intermixture of some inert material promoted the action of the medicine in certain cases; in what way he would not undertake to say, perhaps by merely separating the particles. At any rate they should be careful how they too strongly condemned a preparation, merely on the ground stated in this case, when it was well known and had been long used by the public. They had been accustomed to take a certain quantity of milk of sulphur, and to expect a certain action from it. It mixed with liquids much better than precipitated sulphur did, and he believed a large number of the public, for this and other reasons, liked it better. He did not advocate the use of milk of sulphur, much less the substitution of it for precipitated sulphur, for milk of sulphur was one thing and precipitated sulphur another. If any one supplied the former in the place of precipitated or sublimed sulphur, they would act very wrongly; but when they were asked for milk of sulphur, he could not see that they were to blame for supplying it, and, in many cases, if pure sulphur were substituted, he did not think the public would be satisfied.

Mr. Bland said this subject had been discussed many years ago, and, as the result, he obtained some pure precipitated sulphur and retailed it, and the consequence was an almost universal complaint. Pure precipitated sulphur was with great difficulty miscible in water or any aqueous vehicle, which caused great complaint. Like many others, he had been obliged to fall back on the old preparation simply in self-defence.

Mr. Hills was surprised to hear Dr. Redwood advocate milk of sulphur as a genuine preparation. He would remind him that by the New Pharmacy Act those who sold adulterated articles were liable to a fine.

Dr. Redwood considered that milk of sulphur, as usually sold, was not an adulteration.

Mr. Hills said he did not feel at all sure of that, himself.

Mr. Morson said milk of sulphur did not profess to be pure sulphur.

Dr. Attfield was astonished to find any one connected with that Society sheltering themselves in the matter of adulteration behind either

custom or an old Pharmacopœia. The public knew nothing about the old Pharmacopœia, or how the article was made, or what it was professed to be; if they asked for sulphur they expected to get sulphur. "Milk of Sulphur" was simply the popular name for the official preparation, and he was quite sure that purchasers, in using that name, did not know they were liable to be supplied with an article of which considerably less than half was sulphur. He maintained, as a matter of common sense, that an article which contained two-thirds of its weight of impurity was scandalously adulterated.

Mr. Hooker said that when he started in business some years ago as chemist in a provincial town, he determined to sell only pure drugs, and, accordingly, procured pure precipitated sulphur, which he attempted to sell instead of milk of sulphur. Some of his best customers, however, refused to have it, saying they had always been accustomed to get a good article, and did not like to have anything different. It was in vain for him to explain the case to them, and at last he was compelled to revert to the old-fashioned article. He should like to know what a druggist ought to do under such circumstances.

Mr. Hills said that in the establishment which he represented, nothing but pure precipitated sulphur was sold, and he would rather sell none at all than supply an adulterated article.

Dr. Redwood said that principle was quite correct if they sold it under the name of precipitated sulphur; but what he contended for was, that the two things were quite different. Milk of sulphur was sulphur precipitated with sulphate of lime, according to the process originally given in the Pharmacopœia; it had long been in general use, and he did not consider it was any adulteration whatever to sell under its distinctive name a preparation which had been found advantageous. With the same reason, they might complain of any preparation in the Pharmacopœia which contained something more than was expressed by the name it bare, as an adulteration. For instance, tincture of senna contained something besides senna, but it could not be considered an adulteration.

Dr. Attfield asked if milk of sulphur was a good preparation, why was not the process given for it in the London Pharmacopœia retained in the present one?

Dr. Redwood said he did not advocate the use of milk of sulphur, and should be glad to see it superseded by precipitated sulphur, which was more definite; but, as he had before remarked, there were practical difficulties in the way. One was the greater facility there was in mixing milk of sulphur with water, and he had been told, although he was not prepared to vouch for the accuracy of the statement, that those accustomed to take milk of sulphur found that it possessed greater efficacy, as a medicine, than pure sulphur without the addition of any sulphate of lime. At any rate, he had not medical authority to repudiate such a statement.

Mr. Wood said he had frequently taken milk of sulphur, but could not take precipitated sulphur.

Mr. Martindale said the process was first introduced in the London Pharmacopœia in 1721, and the preparation was there called *lac sulphuris*. which name had ever since been retained for that particular preparation,

Mr. Hanbury thought, in the Pharmacopœia in which it was ordered, the process was given in ignorance. He was far from advocating the use of this calcareous sulphur, which he considered an abomination, and did not think there could be so much difficulty in introducing a pure article as some gentlemen seemed to suppose. In the house in which he was a partner, there had not been any so-called milk of sulphur for a long time. They always used pure sulphur, and never found any complaint.

A Member said when a customer went to a chemist he trusted to him to supply him with a pure article; he did not know the difference between milk of sulphur and pure sulphur.

The Chairman thought the public judged in such matters very much by what they had been accustomed to receive, and if they had been used to an impure article, they would prefer it to the genuine.

Mr. Morson said milk of sulphur was an old preparation, which was literally a mixture of sulphur and sulphate of lime, and the subdivision of the sulphur by this means did, no doubt, influence its action. If any one asks for pure or precipitated sulphur, they should get it; but milk of sulphur was a different thing, which they also had a right to get if they wished for it. He recommended them to keep both articles, and supply whichever was wanted.—*Lond. Pharm. Journ., Feb.*, 1869.

N THE IGNITING POINT OF THE VAPORS OF SOME COMMERCIAL PRODUCTS.*

By W. R. Hutton, Esq.

It is a well-known fact that many commercial products at certain temperatures give off an inflammable vapor, and my object in bringing this paper before the Chemical Section is to give the results of comparative trials of the igniting points of a few of the leading articles of commerce, and also to explain the method employed by me in testing, which is very simple and sufficiently accurate.

In commerce there are several substances which, at the ordinary temperature of the atmosphere, are sufficiently volatile to emit enough vapor to form, with atmospheric air, an explosive mixture. There are many others which do not volatilize at

* Read before the Chemical Section of the Glasgow Philosophical Society, Dec. 21st, 1868.

quite so low a temperature, but which in a warm room, or exposed to the suns' rays, do give off vapors sufficient to render them dangerous; and there are others, again, that require to be considerably raised in temperature ere vapor is evolved, and, in consequence, may be considered sufficiently safe where ordinary care is employed.

I wish it to be distinctly understood that it is the vapor evolved from ordinary commercial substances, and not the point at which the substance itself will ignite that my results refer to. To illustrate the difference in the igniting point of the vapors evolved from different articles of commerce, I pour into one glass a small quantity of sulphuric ether, and into another glass the same volume of ordinary paraffin oil. The one substance—ether—is known to be very volatile, and on bringing a light to within half an inch of its surface an explosion takes places; the other—paraffin oil—is found not to be explosive at the temperature of this room, as it requires a higher temperature to evolve vapor before an explosion will take place.

In the subjoined table, showing the results of experiments made by me, the samples having been purchased in the usual way, I give the specific gravity of the different commercial products, and the temperature at which their vapor explodes when a lighted taper is kept at 1½ inches from the surface; and also the temperature at which the vapor explodes when the lighted taper is kept at only half an inch from the surface:—

IGNITING POINT OF THE VAPORS OF SOME COMMERCIAL PRODUCTS.

	Specific Gravity.		Taper 1½ inches from Liquid. °F.	Taper ½ inch from Liquid. °F.
Sulphuric ether	·747	under	53	—
Bisulphide of carbon	1·270	—	53	—
Petroleum spirit	·706	—	53	—
Paraffin spirit	·751	—	70	68
Benzole, 90 per cent.	·861	—	74	71
Crude paraffin oil	·849	—	74	72
Ditto naphtha	·884	—	78	74
Brandy	·940	—	—	85
Wood naphtha	·840	—	88	81
Crude paraffin oil	·891	—	89	84
Ditto naphtha	·881	—	90	86

Holland gin	·930	—	—	90
Rum	·936	—	—	90
Methylated spirit	·827	—	97	86
Burning coal naptha	·859	—	100	91
Spirit of wine	·817	—	104	73
Whisky, 25 O.P.	·893	—	109	83
Ditto 11 O.P.	·905	—	110	84
Petroleum oil	·801	—	118	110
Light pitch oil	·920	—	119	109
Resin spirit	·922	—	122	106
Turpentine	·875	—	130	119
Sherry wine	·993	—	—	130
Port wine	1·003	—	—	130
Refined paraffin oil	·809	—	134	123
Ditto	·814	—	138	127
Fusel oil	·850	—	140	129
Resin oil	·987	over	212	—
Heavy pitch oil	·950	—	212	—

It will be observed that the specific gravity bears no relation to the temperature required to expel vapor from many of the products mentioned in the table, and this, in some instances, arises from the fact that they are not isolated chemical substances, but consist of distinct compound bodies mixed together, the lighter of which usually, but not always, distils off first. This is very well shown from the results obtained in experimenting on the two samples of crude and the sample of burning naphtha, the benzole having been separated from the latter by fractional distillation. In the crude naphtha there always exists a large proportion of tarry matter and naphthaline, and with a gravity approaching to ·890 as compared with burning naphtha, which has been freed from all tarry matter, and has a gravity not exceeding ·860; it is not to be expected that the crude will give off vapor as readily as the refined. This has been the case, however, as is indicated by the table of results. The crude gave off vapor at a much lower temperature than the refined burning naphtha; and the same remark applies to the results obtained from crude and refined paraffin oils from which paraffin spirit has been separated. In the case of spirit of wine and different proportions of water, and also of liquids that will mix with water, a deduction from the specific gravity might be made, which would at once indicate the igniting point of the vapor, and also

the percentage of spirit in it; this, however, I have not gone into. The proportion of volatile matters to be found in different crude commercial substances is exceedingly variable, and therefore no line for guidance do I offer; but in manufactured articles of commerce, where a volatile and a less volatile mixture are together, the manufacturer and the merchant have it in their power to exact a standard at which the vapor will not ignite. A very small percentage of a volatile compound is sufficient to make the whole bulk dangerous, and in some instances accidents from this circumstance are very apt to arise. In the printed table I have light pitch oil, the vapor of which explodes at 119° F.; this point of ignition is not what is considered at all dangerous as compared with bisulphide of carbon or benzole; it is, however, equally dangerous, and for this reason—that the latter is known to give off inflammable vapor which ignites at a low temperature, while the former, on account of its familiar name —pitch, oil, or creosote—is looked upon as not at all explosive. In this sample of light pitch oil, the volatile matter which gave off inflammable gas at 119° did not exceed 2 per cent., after which no combustible vapor was given off until a temperature of 180° was reached, thus clearly showing that the low explosive points of the vapors of some commercial substances depend upon a very small percentage of volatile extraneous matter.

Now I shall explain the small apparatus used in estimating the igniting point of the vapors, and which is very simple.

It consists of a water-bath, with basin thermometer and spirit lamp. In operating, I put the same quantity of cold water into the bath each trial, in order that the time required to raise the temperature of the water is as nearly as possible the same. Into the small basin I put a known measure of the liquid under examination (in this instance, also, the same volume is always used); the thermometer is then adjusted with the bulb immersed under the liquid in the basin. The spirit lamp is now lighted and placed under the bath—the water in the bath is gradually warmed, which, in its turn, heats the liquid under trial. The rise of temperature is indicated by the thermometer, and by means of a lighted taper and careful attention it is easy to catch the first flash of vapor evolved. In order to have exact com-

parative trials, it is not only essential to have all the experiments conducted on the same principle, as regards detail, but it is also of the greatest importance that the surface of the liquid and the taper used in catching the exact point at which the vapor explodes, shall be at an equal distance in each case. This point is of the first importance to all who test the igniting point of vapors; and to explain this statement more clearly, I have printed on the table the results of experiments made on the same commercial samples, keeping the lighted taper 1½ inches from the surface of the liquid, in one case, and in the other at only half an inch from the surface of the sample under trial. The results are as expected—when the vapor has to diffuse and mix with atmospheric air through a space of 1½ inches, it is found that a greater temperature is required in order to evolve the larger quantity of vapor, than in the experiments of only half an inch between the lighted taper and sample; and this is explained by the circumstance that the vapor, immediately on being liberated, mixes with the small volume of atmospheric air in the experimental basin, forming with it a mixture which, on meeting a light, explodes. In the other set of experiments, a greater temperature is required to disengage a larger volume of vapor to mix with the greater proportion of air.—*Chem. News*, *Jan.* 22*d*, 1869.

NOTE ON THE UTILIZATION OF CHROME ALUM.

By M. F. Jean.

The manufacture of aniline green and violet, and of valerianic acid, gives abundant residues of chrome alum. These residues cannot be utilized as mordants, because, when calcined, they are insoluble in water, and therefore do not find a sufficient market, thereby considerably augmenting the net price of products prepared with bichromate of potash. Whilst endeavoring to turn these residues to account, I discovered that when chrome alum, previously mixed with three equivalents of carbon, is heated to redness, decomposition takes place as follows:—

$$SO_3KO,3SO_3Cr_2O_3+3C=3SO_2+SO_3KO+Cr_2O_3+3CO.$$

If, on the other hand, chrome alum be decomposed with seven

equivalents of carbon, the evolution of sulphuric acid is less than in the first case, and the mass taken up by the water yields sulphide of potassium and hyposulphite of potash: sesquioxide of chromium obtained under these conditions must be separated, by washing in acidulated water, from a certain quantity of sulphide of chromium, Cr_2S_3, formed by contact with the sulphide of potassium. It is better to decompose the alum with three equivalents of carbon than with seven, because the decomposition is quicker and purer.

The industrial treatment of chrome alum is very simple; it consists of pulverizing and mixing the alum with the carbon, and then decomposing it at red heat in a retort of refractory earthenware. The sulphuric acid passes into a series of bitubular flasks, containing either distilled water, carbonate of soda, or polysulphide of sodium. When sulphuric acid is no longer liberated, the decomposition is ended. The obturator of the retort is then withdrawn, and the mass, consisting of sulphate of potash and sesquioxide of chromium, is caused to fall into a cast-iron boiler, water is added and the whole is boiled to dissolve the sulphate of potash, which is afterwards separated by crystallization; the sesquioxide of chromium is placed to drain upon cloths, and then calcined to remove the water that remains. This oxide may easily be rendered chemically pure by washing it in a boiling dilute solution of carbonate of soda, thus removing all traces of sulphuric acid which had escaped the action of the pure water. The sesquioxide of chromium obtained by this process is of too dull a green to be used for printing paper or textile fabrics; but, on account of its purity, and the ease with which it may be treated, it is perfectly adapted for making bichromate of potash—*Chem. News, Feb. 26th*, 1869, *from Comptes Rendus.*

ON THE SUBSTITUTION OF SODIUM FOR PHOSPHORUS IN LUCIFER MATCHES.

Dr. H Fleck, of Dresden, has instituted a series of experiments with the view to obtain a non-poisonous paste for the application to lucifer matches. He ascertained, by some preliminary experiments, that sodium, when minutely divided along

with explosive substances, becomes highly inflammable when simply moistened with water. A mixture, constituted according to the formula—

$$(KO,NO_5)+Na+2C=(KO,CO_2+NaO,CO_2)+N,$$

formed a greyish-colored mass, which, on being touched with a moistened glass rod, ignited like gunpowder; this mixture was, however, found to be unfit to ignite ordinary brimstone matches for a cotton wick soaked in petroleum. In order to mend this defect, black sulphuret of antimony was substituted for the charcoal, according to the formula—

$$3(KO,NO_5)+Na+(SbS_3)=NaO,SbO_5)+3(KO,SO_3)+3N,$$

and the mixture made up of—

0·5 grammes	of sodium	=	4·65 per cent.
66·0 "	nitrate of potash . . .	=	61·39 "
36·5 "	sulphide of antimony .	=	33·96 "

Provided that during its manufacture this mixture is kept thoroughly dry, it has been found to answer admirably well. The mode of making it up is briefly as follows:—Pure solid paraffin is put into a well-stoppered glass flask, and melted over a sand bath; when fluid, clean pieces of sodium are added, and liquefied under the paraffin. As soon as the metal is thoroughly liquefied, the flask is closed and shaken for about ten minutes, which has the effect of granulating the metal, or rather reducing it to a fine powder. The metal is then poured out of the flask along with the paraffin, and the sodium taken out of the paraffin by means of a clean dry spoon; from 30 to 35 per cent. of paraffin remains adhering to the metal; this, however, does not impair its inflammability, while it tends to preserve the metal. Owing to this increase, instead of 5 grammes, 6·6 grammes of the metallic powder thus obtained must be weighed off. The incorporation with the other ingredients, previously well dried and warm, is effected under petroleum in metallic mortars, but each of the substances is first mixed with some petroleum, and pulverized separately before being triturated with the sodium; instead of gum or glue, caoutchouc, previously soaked in light petroleum oil at 110° C. for ten or twelve hours, is used as mass to form an adhesive paste with the other materials. According

to several accounts from Germany, this plan of substituting sodium for phosphorus has been favorably taken up by some of the largest and leading manufacturers of lucifer and fusee matches. There is said to be not the least danger in the transport.—*London Chemical News, March* 25, 1860. *Abridged from Deutsche Industrie Zeitung.*

NOTE ON THE SO-CALLED CARBOLIC ACID, OR COAL TAR CREASOTE.*

By Edward R. Squibb, M. D.

(From the Proceedings of the American Pharmaceutical Association. Revised by the author with additions and corrections, for republication in the American Journal of Pharmacy.)

The chief object of this note is to mention some recent experiments with this important substance, and some deductions drawn therefrom.

It is pretty well known that the creasote of the common market of late years has been made from coal tar, and that it consists mainly of two substances, often called carbolic and cresylic acids, in not very uniform proportions. In the process of rectifying the creasote for the markets, the portions which distilled over at a low temperature, say below 190° C., and at a very high temperature, say above 220° C., were rejected. An examination of this creasote by the light of advancing knowledge, showed that it was a complex substance, consisting mainly of two similar liquids of different ultimate composition and properties, which could be separated by the difference in their boiling points. These liquids, when examined for classification, were at first supposed to be acids, and that having the lower boiling point was called carbolic acid, from carbon and oil or the coal oil from which it was obtained. It was subsequently found to belong to the phenyl group, and was then called phenylic acid; and its congener, the other principal liquid of

* This note was intended as a supplement to an expected paper from Prof. Chandler, of New York, upon the chemical character and relations of this substance; and therefore the pure or accurate chemistry of the subject has not been developed here, but chemical properties and characteristics have only been added as required, since finding that Prof. Chandler has not had time to prepare his paper.

higher boiling point, was found to belong to the cresyl group or series of organic compounds and was called cresylic acid. Another liquid found in creasote, but in small proportion, and having a still higher boiling point, was found to belong to the xylene series, and was called xylic acid. In proportion as the rectification of the creasote rejected the higher and lower boiling point liquids, so it would contain more or less of these so-called acids, and thus would vary in its composition, and boiling point. Subsequent examination proved that these liquids were not acids at all, and their composition led modern chemists to consider them as alcohols. For some time they were classed with alcohols, and the coal tar creasote of the markets was then regarded as a mixture, in varying proportions, of phenyl-alcohol and cresyl-alcohol, with small and unimportant proportions of other organic compounds.

Still later investigations by modern European chemists appear to have established the fact that they are not alcohols. Their composition appears to be precisely that of the alcohols, and this led to the classification of them as alcohols. Further investigation of their properties and combinations shows that they do not behave at all as alcohols, though uniform with them in composition. The researches of Kékulé upon this point seem now to be generally accepted, and the difference in properties and behaviour are attributed to a different construction of the molecule from the same elements. Upon these views a class of organic compounds has been erected and called phenols, and the phenyl compound, or crystallized carbolic acid, under the name Phenol, seems to have been adopted as the type of the class, just as common ethylic alcohol is called simply Alcohol, and is adopted as the file-leader or type of the class or group of alcohols. Hence Phenol is the now accepted name for crystallized carbolic acid, or phenylic alcohol, and cresyl-phenol, or cresylol, or cresol, is the name for the cresylic acid, or cresylic alcohol. The so-called xylic acid appears to have been less studied, and its position is not known. If it be homologous with the others, and of similar construction of molecule, its condensed name would be xylol, and we should then have Phenol, cresol and xylol as the import-

ant members of this group at present known and partially investigated.*

These facts and circumstances render it unwise to learn to designate these substances as alcohols, since this would be quite as inaccurate as to call them acids; and it must be far better to keep up with the progress of science, even at the expense of frequent changes. Ascertained facts are always safe indications to change in the advancement of knowledge, but it is not always easy to discriminate between fact and fallacy.

The dark colored oily liquids met with in the markets under the name of crude carbolic acid for the lower grades, and impure carbolic acid for the better grades is this same mixture of these liquids in varying proportions, but commonly containing more or less tar, oil, etc., and is therefore in reality coal tar creasote. It is now not only inaccurate but positively incorrect to call this mixture (or either of its constituents) an acid, and the longer it continues to be so-called the more difficult it will be to change it. And as it is a very important substance now, and must come into far more important and far more general use; and as in practical general application it will probably always be a liquid mixture of these two or more phenols, there appear very good reasons for going back to the original well-constructed name of creasote for it, leaving the name "wood creasote" for the rare substance described by Reichenbach and others, which, however, has similar physical properties and is applicable to the same uses. When separated, each phenol should take its proper name, as Phenol and cresol.†

* The researches of M. Kékulé upon the Aromatic Series to which these substances belong, and the well and long known antiseptic properties of the aromatic oils in general, leads to the inquiry as to whether these may not be a natural general relation between aromatic odorous substances and septic processes. If there be such a relation, is it proportionate to the strength or power of the odor, as would seem to be indicated by the well known effects of oils of Thyme, Cinnamon, etc.?

† When *the* Phenol which stands as the type of the group of phenols,—namely, "crystallized carbolic acid,"—is intended, it is useful to write it with a capital P. But when *a* phenol is indicated, the word should not be capitalized. Such distinctions tend to accuracy of expression, and are therefore both nice and wise.

As these things grow into common use, and through science are applied to the necessities of mankind, they become objects of mercantile interest, and when taken up as sources of gain or profit, they are apt to be studied and applied with a bias directed by the pecuniary interest of the manufacturer. To the foresight and mercantile enterprise of Messrs. F. C. Calvert & Co., of Manchester, England, the world owes mainly the practical application of the scientific knowledge and research of Runge, Laurent, Williamson and others, in regard to this subject, and it became the interest of this firm to push forward those grades and forms of the substance which would best repay their praiseworthy labor, and large outlay. These grades were those which required most skill in their production, and in which they were least liable to an early competition. Phenol, or crystallized carbolic acid, being the most abundant and the most stable of the compounds which make up coal tar creasote, and, by dexterous and skilful management, susceptible of separation and purification into the condition of a beautiful white crystalline "carbolic acid," became their chief object, so that upon this all their statements were based, and toward it all their efforts tended, whilst with it all the early experiments were made, and upon it the trials in practice were based. The cresol, or cresylic acid, for some time was supposed to have little or no antiseptic or azymotic effect. As the field of labor and application enlarged, however, and particularly when the substance came to be applied upon so grand a scale as that of attempting to control the cattle plague throughout northern Europe, under the direction of such men as Mr. William Crookes and Dr. Angus Smith, of London, it expanded somewhat beyond the mercantile influences, and the cresol was shown to be equal with, if not superior, to the Phenol in azymotic effect. Taking this hint from the valuable paper of Mr. Crookes three years or more ago, the writer made some experiments upon fungi, which, though scarcely definite enough to deserve the name of experiments, convinced his judgment that the somewhat incongruous mixture of coal tar products, which, when properly separated from oils and pitch, commenced to boil at about 180° C., and distilled over below 235° C., though still containing water and impurities, was more

efficient as an azymotic than the pure crystals of Phenol. Through a small experience of two years or more, this conviction has been strengthened until the question of separating these substances and rejecting the cresol was no longer in doubt, though still not proven; and lately a series of experiments were made which have set the matter at rest in the writer's mind, and are now to be briefly referred to.

It was found, as expected, that a very dilute solution of the impure mixed phenols very promptly destroyed and detached the cryptogamous plants, which grew in the form of a green mildew upon the brown stone and drab stone fronts and areas of residences which were shaded and damp. This troublesome and unsightly defect being so perfectly and so easily controlled by the creasote, suggested that these plants would be an easy practical test of the azymotic efficacy of the phenols in solutions of various strengths. The cryptogams, as they grew upon a brick pavement in a damp place, were made the subject of the experiments, and the solutions were applied with a camel's hair pencil. In a preliminary series of trials, solutions of the impure mixture, of various strengths, were applied without apparent effect, the plants looking as green and healthy as ever on the evening of the day of the application. A shower came in the night, however, and in the morning the bricks were bare and clean wherever the solutions had been placed. It was then remembered that the destruction of the chlorophyl of plants was a kind of fermentation, and it was argued that these solutions killed the plants by their azymotic power, but by their antiseptic power had prevented the destruction of the chlorophyl, which is the common evidence of death in the green parts of plants. The plants had lost their hold with their vitality, and the rain drops had washed them away, leaving the boundary lines of contact of the solution as sharp as though made with a knife, though quite invisible the evening before after the solutions had dried off.

This little observation shows the need for a new word to express the peculiar power of this substance over vitality, and which might subserve the purposes of convenience and accuracy of expression now when this peculiar and comparatively new

power is coming under critical investigation. Dr. Angus Smith proposes "colytic," which is a good term, but needs the natural relation to the already well established word zymotic. This relation is supplied in the French word antizymotique, which is found in Nysten's Dictionary, and is a better word, though perhaps a little less convenient than azymotic, which is proposed by the writer and used in this note. The etymology is evident, and its meaning in contradistinction to antiseptic, the nearest word to it, is well illustrated in the behaviour of these green cryptogams.

The next step in the experiments was to separate the two phenols. This was accomplished, perhaps not perfectly, but as far as could be practically useful, by fractional distillation; and the cresol thus obtained, but not dehydrated, was used in competition with Calvert's crystallized carbolic acid, thus giving an advantage to the latter. The sensible properties of the two substances are very different when critically examined, but the greatest difference is in solubility. The Calvert's crystallized carbolic acid used was, at ordinary temperatures, soluble to the extent of about 6·6 per cent. The cresylic acid, or cresol, as imperfectly isolated here, was soluble to the extent of only 1·3 per cent. at the same temperatures and by the same management. Thus the saturated solution of Phenol contained about five times as much of this substance as the saturated solution of cresol. Filtered solutions of each, containing accurately one per cent., were made under the same conditions of temperature, etc., but the Phenol had the advantage, first, because it was dehydrated, or nearly so; secondly, because it was pure and dissolved entirely, whilst the cresol was not pure, or completely separated from other soluble substances, and left an insoluble residue of at least two or three per cent. (estimated) upon the filter. The same volumes of each were, however, accurately taken, namely, 10 c. c. in the litre, the remainder being distilled water. Then 10 c. c. of each of these solutions was diluted with 90 c. c. of distilled water; and again 10 c. c. of each of these last was diluted with 90 c. c. of distilled water. These solutions then contained, respectively, ten parts in the thousand ($\frac{10}{1000}$). One part in the thousand ($\frac{1}{1000}$), and one part in ten thousand ($\frac{1}{10000}$).

These were then used for making other solutions, from which the following results were obtained.

The trials upon the lichens or cryptogams were commenced with solutions containing one-half of one per cent., or five parts in the thousand ($\frac{5}{1000}$). A single application of either had no visible effect upon the plants. By a second application of the same solutions to the same places, the plants were completely killed by the cresol, but not visibly affected by the Phenol. A third and fourth application of the solution of Phenol to the same spot produced no apparent effect. Solutions containing one per cent. were next used. A single application of this promptly and entirely destroyed the plant in the case of the cresol, but had little, if any, effect from the Phenol. In repeating the trial, it appeared possible that the younger and more feeble plants were killed by the single application of Phenol, but this was not certain. A second application to the same places killed almost all the plants when applied in localities where they were not very abundant and very vigorous. Occasional patches of the strongest plants were, however, generally left after the second application of the solution of Phenol of one per cent. A third application of this, however, cleaned them all off, apparently as clean as did the single application of the solution of cresol of the same strength.

Mixtures of the two solutions were then tried, with results which could have been predicted by calculation upon those above given.

Then the natural admixture of the phenols as they occur in the so-called impure carbolic acid, where the liquid which distils over between 180° C. and 208° C. is taken altogether, and becomes black by exposure to light and air, 80 or 90 per cent. being soluble in water. This impure mixture produced very decidedly stronger effects than the pure Phenol solution of the same strength, the effects being estimated to be nearly, if not quite, double.

These results seem to prove that the crystallized Phenol, or crystallized carbolic acid, is by far the least effective of these two chief tar products as an azymotic. But at the same time that they are very definite in regard to the fact, they are much

less definite as to the degree. All that can be considered as proved is that the cresol has more than double the azymotic power of the Phenol in its application to these mosses; but how much more than double is not shown. In searching for a more sensitive mode of comparison, the smell and taste were finally adopted, but as it was soon proved that the smell was far less delicate than the taste, the latter alone was relied upon. The taste of the two is very different. That of the Phenol is characterized by its sweetness and comparative blandness. That of the cresol is smoky, dry as opposed to sweet, and pungent, and is not instantly developed. In very dilute solution the latter has only a smoky taste. In these trials by taste it was soon found to be necessary to consult a number of persons quite independently of each other, and also to have some criterion or test of the delicacy of different tastes, so as to exclude those which were not tolerably sensitive, and it was very curious and instructive to see how this sense varies in different persons. Solutions of common ethyl-alcohol were fixed upon for this test, and it was found that comparatively few persons could recognize a mixture of one part common alcohol in ten thousand parts of distilled water; but that many would promptly detect one part in five thousand. This test served well in selecting the tastes to be relied upon, and in no single instance did cross-examination, by change and confusion of bottles, and other efforts, succeed in materially changing or interfering with the decisions made. Ten persons beside the writer were selected from many tried, and their evidence was accepted in the following results. Four of these proved upon repeated trials to exceed the others in delicacy of taste, and two were quite sensitive, making their decisions with great promptitude and certainty. These were repeatedly tried, not only upon their own conclusions, but were used to test the conclusions of others, and the different trials were made upon different days; extended over a period of many days, and were often made early in the morning, when the senses are fresh and impressible, and before the odors of a laboratory had blunted the perceptions of those occupied in it. A series of preliminary experiments and observations were made by which to learn how to conduct them, and how best to avoid the many chances of inaccuracy and fallacy. The solutions used were made with great care and accuracy from the

same phenols used for the cryptogams, namely, Calvert's crystallized medicinal carbolic acid No. 2, and the cresol imperfectly separated and prepared by the writer. Among the many persons, probably twenty, to whom these solutions were presented, only two or three failed to detect both the phenols in solutions which contained one part in ten thousand of distilled water. The whole of the ten persons relied upon detected the Phenol, or "crystallized acid," in a solution which contained one part in twenty thousand, though all did not detect it every time they were tried, and many failed to detect it when tried soon after having tasted a stronger solution. One observer only could detect the "crystallized acid" in a solution of one part in fifty thousand, and, although his testimony is unequivocal, his evidence is unsupported. No one gave the slightest evidence of taste in a solution of one part in one hundred thousand parts of distilled water. Every one of the ten persons relied upon detected the cresol in a solution of one part in one hundred thousand parts of water every time it was submitted to a fresh, clean palate for trial, and generally detected it even after other trials. Five of the ten persons easily, promptly and repeatedly detected the smoky taste of the cresol in a solution of one part in two hundred thousand parts of distilled water, and detected it so promptly as to show that this was not the limit of easy detection, although this was the most dilute solution tried. This solution is in the proportion of 1 c. c. in 200 litres, or about 15½ grains in 52 gallons.

These results lead to the conclusion that to the ordinary sense of taste the cresol is from five to ten times stronger than the Phenol. How far this single series of experiments may be safely accepted it is difficult to decide, but their indication is unequivocal that the azymotic power in the two phenols is very different, and is in favor of the cresol in about an inverse proportion to the degree of solubility in water. That is to say, that the azymotic power of the saturated solutions is somewhere about equal, whilst the saturated solution of Phenol holds five times as much of that substance as a saturated solution of the other does of cresol. Should subsequent investigation establish any dependent relation between aromatic odorous substances and antiseptic effects, these differences between Phenol

and cresol may be usefully illustrative; for the more feeble Phenol, when quite free from the other homologues, is, as here shown, comparatively odorless and tasteless; and this, which has been an advertising card for it, may be, and probably is, a useful indication of inferiority. A series of experiments commenced at the end of February, 1869, and therefore as yet hardly well begun, yet appear to indicate that there is much less difference in the antiseptic value of the two phenols than in their azymotic value, and thus far exhibit a very unexpected difference in this respect. Weighed quantities of fresh meat digested with measured quantities of dilute solutions, and compared with similar proportions of meat and simple water, at temperatures favorable to decomposition, do not thus far (in seven weeks) show any marked difference in the antiseptic effect of the two phenols. The parallel solutions used were from one per cent. down to twenty-five thousandths of one per cent. (0·025 per cent.), and even the weakest of these presented a distinct contrast with the simple water during the first period of two weeks. The albumen was not visibly coagulated in solutions containing 0·5 per cent. or less, and the contents of all the vessels which contained over 0·1 per cent. dried up to smoked meat without putrefaction. It was noticed that in the very dilute solutions either the watery vapor soon carried off the phenols, or that the small amount present was used up or decomposed by the meat, since after about three weeks no sensible evidence of their presence could be detected, and the putrefaction thereafter seemed to go on with nearly the same rate of progress as with the simple water. Other series of experiments were started in flasks and covered vessels, and are to be continued through the summer, in order to control and check some already discovered sources of error, and if completed the results will be given hereafter. Whether these circumstances may be a good measure,—or a measure at all,—of their relative intrinsic value in use, is certainly not determined, though in the writer's judgment it is so very probable as to leave no doubt as to the impropriety of separating and rejecting the cresol; and one object of this paper will have been accomplished if this point can be raised for future experience and more accurate research. In the meantime it is very obvious that

a mixture of the two phenols in the ordinary proportions in which they occur in the available products of coal tar distillations, is at least equally useful for all the known purposes to which the crystallized carbolic acid has been applied in medicine and in hygiene, whilst such mixtures are far cheaper and far more easily obtained.

These mixtures are commonly known as impure carbolic acid until they get into hands where nothing is admitted to be impure. They then take the very bad name of "*solution* of carbolic acid," and are generally so labelled. This is intended to mean liquid carbolic acid, and is very bad because it confounds this caustic and powerful liquid with the dilute solutions of it commonly required and used. The name "solution of carbolic acid" should never be used for the strong liquid of various shades of color commonly sold in pound bottles with a mere strip label, and it is remarkable that no serious accidents have been heard of from this common use of so bad a name.* It can be justly said that impure carbolic acid is equally inaccurate, but it is not so bad because not dangerous. A far better name would be creasote, simply, or coal-tar creasote, with the synonym, so long as this may be useful, "or carbolic acid so-called."

This liquid, as obtained from different makers, varies considerably in the proportion of the two principal phenols, and always contains at least one other homologous compound in small proportion, as well as other substances which are accidental, and also in small proportion. These variations in proportion, and accidental contaminations, when within reasonable bounds which are easily controlled by simple tests, are practically quite unimportant, and may, for the present at least, be wisely and safely disregarded in a substance so important to be promptly known and recognized in general use. When freshly distilled, this creasote is a transparent, colorless, highly refracting oily liquid, heavier than water, having a pungent, sometimes slightly sulphurous odor, and pungent caustic effect on the

* As this paper is going to press an instance is reported in a French Journal of three women affected with itch, who applied the strong liquid to the surface of their bodies by sponging. One died very soon, another, after lingering a few days, but the third finally recovered.

tongue. When exposed to the light it promptly begins to acquire color, and in twelve hours becomes of a delicate wine color of a rosy tint. From this, by continued exposure, it passes through all the shades of reddish-brown to a violet-black by reflected light, or a very deep brownish-red, or deep garnet by transmitted light. This change of color may be—in great measure, at least—delayed at any point by seclusion from light, and hence the lighter or darker color as usually met with is merely an indication that the manufacture has put it up in wrappers, etc., sooner or later after distillation. This effect of light is upon the impurities, and not upon the phenols themselves, all of these being colorless. And this mixture of them may, by repeated distillation, which is within easy practical reach of the large manufacturer, be rendered so free from these coloring substances that any ordinary prolonged exposure only produces a wine color in the mixture. This condition is desirable, and when attained, as it doubtless will be, for general sales and use, the practical limit of useful purification, even for the nicer medical uses, will have been reached, since no intrinsically better substance can be produced.

(To be continued.)

REMARKS ON SENNA.

By T. and H. Smith, Edinburgh.

We have read with great interest the paper on "Senna," contributed to the Pharmaceutical Conference by Mr. Groves, and published in the October number of the Society's Journal. The subject is important and interesting in itself, and the novelty of the facts stated, and the information yielded as to the real nature of the cathartic principle of the drug, must draw the attention of pharmaceutists and medical men to its value. The interest of the paper was enhanced considerably to us, by the fact that we had spent much time in endeavoring to isolate the purgative principle, and obtain it in a form capable of producing all the beneficial physiological action of the infusion, unaccompanied with the feelings of sickening and

loathing experienced by almost every one at the very thought of the drug. Whatever interest to ourselves our own labors in connection with senna may possess, we would not have thought of making them public, but for the belief that they may be of some value to others, if only by confirming, in the main, the results arrived at by the author of the paper in the Society's Journal, and those gentlemen whose works he quotes. We claim nothing that can in the least lessen the merit of these chemists, and the honor due to them for what they have so ably done.

It is now nearly thirty years since our investigations led us so far as to find that the principle of senna, upon which its cathartic action depends, could form a solid compound, which, in the dose of 4 or 5 grains, possessed all the beneficial action ofa full dose of senna infusion. The method adopted by us to obtain the compound in question, was this :—The watery infusion of senna was concentrated in a good vacuum to not too thick a syrup. The extract was then wrought up with abundance of rectified spirit, which caused a separation of the gummy and other inert matters in a solid form, and, if the concentration had not been carried too far, nor the spirit too strong, the active material was entirely contained in the spirituous liquid. It was found to be of the utmost importance that the spirit should not be above a certain strength, for if attention to this point was neglected, a portion of the active principle (more or less, according to the strength of the spirit) was found in the solid matter separated. There is, however, a sure rule for knowing when the spirit is too strong or the extract too thick, and it depends on the circumstances that when an aqueous extract of senna is mixed up with too strong spirit, the separation produced by the action of the spirit forms clotty masses, instead of a more or less loose solid. When the separation forms clotty masses, the remedy is to pour off the spirit and mix in as much water, with the clots, as will completely disintegrate them. The resulting solution, or syrupy liquid, is again treated with the rectified spirit before used, and as much more as may be necessary. By this means a spirituous solution is obtained containing the whole of the cathartic principle of the senna.

The liquid thus prepared gave us the means of obtaining the compound above referred to, which is composed of a mixture of acids and other substances combined with lime, and free lime. So far as it could be tested by its action on the human frame, it contained all the active principle of the quantity of senna from which it was obtained. To prepare it, slacked lime was made into a milk and added to the spirituous solution of the extract of senna above mentioned, and the resulting precipitate on being collected by filtration, washed with strong spirit, and dried as much as possible by strong pressure between folds of blotting-paper, was found, as already mentioned, to be a powerful cathartic in the dose of 4 or 5 grains.

The denial of the solubility of the active principle of senna in strong spirit, made by Mr. Groves, is in part correct, but cannot apply to the tincture of senna of the British Pharmacopœia, as the spirituous solution which gave us the cathartic compound was, at the least, above proof, and was found by ourselves in experiments on our own persons, to have the full strength of its equivalent of senna leaves.

After reaching the length we have indicated in our researches, we were reluctantly compelled to desist making any further attempts to arrive at the end we had in view, at least for the time, but we never lost the hope of resuming our investigation under more favorable circumstances. In an investigation of the nature of the present, it is evident that wrong steps must be checked by using the human frame as a medium for testing the existence of a cathartic power in any product. In consequence of this constantly recurring necessity and the difficulty of getting or asking another person to submit to the at least disagreeable ordeal, we were led to dose ourselves to such an extent as to bring on, in one of us, a state of irritation of the whole mucous membrane of the alimentary canal, extending even to the nostrils, and the effects of which have not disappeared even to this day, so that we were compelled to throw aside the whole investigation, and it affords us much pleasure to see that it has been taken up and so well wrought out by others.—*Lond. Pharm. Jour., Nov.*, 1868.

Minutes of the Philadelphia College of Pharmacy.

The forth-eighth Annual Meeting of the Philadelphia College of Pharmacy was held at the College Hall, No. 143 North 10th st., on Monday evening, March 29th, 1869; thirty-one members present.

In the absence of the President, the first Vice-President, Dillwyn Parrish, presided. The minutes of the last meeting were read and approved. The minutes of the Board of Trustees were read by A. B. Taylor, Secretary of the Board. These minutes inform that the Annual Commencement was held March 23d, when the Diploma of the College was conferred on 48 candidates, as follows:

LOUIS A. BATES, Montgomery, Ala.....*Pharmacy and its Requirements.*
JAMES S. BELL, Albion, Canada.....*Mistura Aloes Composita.*
HENRY K. BOWMAN, Philadelphia, Pa.....*Tannin in Vegetable Astringents.*
JOSEPH J. CUMMINGS, Philadelphia, Pa.....*Sabbatia.*
JAMES CRAVEN, Philadelphia, Pa.....*Anilin,*
AARON R. DAVIS, Allentown, N. J.....*The Drug Business.*
HENRY H. DAVIS, Crosswicks, N. J.....*Erythroxylon Coca.*
JOHN G. DeHUFF, Lebanon, Pa.....*Iris Versicolor.*
CHRIST. ED. EYSTER, Chambersburg, Pa.....*Hamamelis Virginica.*
JAMES G. FRITCHEY, Lancaster, Pa.....*Robinia Pseudo-Acacia.*
CARL FRÜH, Philadelphia, Pa.....*Legislation in behalf of Pharmacy.*
CHARLES HAND, Burlington, N. J.....*Extractum Pepo Fluidum.*
CHARLES E. HOLSTEIN, Norristown, Pa.....*Extemporaneous Pharmacy.*
THOMAS J. HUSBAND, Ja., Philadelphia, Pa.....*The Leaves of Podophyllum Peltatum.*
HAMILTON HUTCHINSON, Philadelphia, Pa.....*Crystallized Nitrate of Mercury.*
G. W. ISARD, Philadelphia, Pa.....*The Leaves of Baptisia Tinctoria.*
D. AUGUSTUS JONES, Mount Holly, N. J.....*Chelidonium Majus.*
CLEMENT KELTY, Salem, N. J.....*Comptonia Asplenifolia.*
GEORGE W. KENNEDY, Pa.....*Olea Fixa.*
C. H. KOLP, Pa.....*Stillingia Sylvatica.*
WM. E. KREWSON, Abington, Pa.....*Epigæa Repens.*
EUGENE LAMPARTER, Germany.....*Genuine Angustura Bark.*
CHARLES H. MERKLEIN, Chambersburg, Pa.....*The Science and Art of Percolation.*
WM. W. MOORHEAD, Germantown, Pa.....*Prinos.*
AULAY W. PECK, Philadelphia, Pa.....*Erigeron Canadense.*
STEPHEN F. PENROSE, Quakertown, Pa.....*Hydrangea Arborescens.*
ADAM PFROMM, Philadelphia, Pa.....*Animal Fats.*
FREDERICK H. PHELPS, Jackson, California.....*Utility of Glycerin.*
FERRIS PRICE, Philadelphia, Pa.....*Patent Medicines.*
MILTON RAMBO, Chester, Pa.....*Lycopersicum Esculentum.*
CHARLES B. READ, N. J.....*Suppositories.*
JOHN J. REYNOLDS, Chambersburg, Pa.....*Annotta.*
WILLIAM T. RIDGWAY, Mount Holly, N. J.....*Stillingia Sylvatica.*
HENRY E. ROBERTSON, Philadelphia, Pa.....*Folia Centaureæ Helicis.*
JAMES S. ROBINSON, Philadelphia, Pa.....*Collinsonia Canadensis.*
ROBERT C. SHARP, Pennington, Pa.....*Folia Centaureæ Benedictæ.*
JACOB H. STEIN, Anniville, Pa.....*The Model Druggist.*
J. SCOTT STORKS, Philadelphia, Pa.....*Spigelia Marilandica.*
HARRY B TAYLOR, Philadelphia, Pa.....*Tabacum.*
L. ALPINUS TREICHLER, McKeansburg, Pa.....*Benzoin in Ointments.*
CHARLES B. UNSICKER, Cincinnati, Ohio.....*Suppositories.*
JARVIS R. WALLEN, Bridgeton, N.J.....*Prinos Verticellatus.*
FRANK WARE, Bridgeton, N. J.....*Xanthoxylum.*

SAMUEL F. WARE, Bridgeton, N. J.....*Panax Quinquefolium.*
HARRY B. WEYMER, Philadelphia, Pa.....*An Important Question.*
EDWIN K. WILSON, Haddonfield, N. J.....*Protoxide of Nitrogen as an Anæsthetic.*
CHARLES WIRGMAN, Philadelphia, Pa.....*The Yellow Oxide of Mercury.*
ISAAC G. WOLFE, Philadelphia, Pa.....*Gossypii Radix.*

The minutes of the Board further inform that a portrait of R. Eglesfield Griffith, M.D., had been presented to the College by the Zeta Phi Society; also that the Board had appointed a committee to draft a proposed law designed to regulate the sale of Poisons and practice of Pharmacy in the State of Pennsylvania.

The Treasurer's report showed a balance in his hands of $890.86.

A series of engraved portraits had been received from Fred. Hoffman, PhD., of New York. The portaits, neatly framed—representing scientific men—were placed in the College Hall.

The minutes of the Board further inform that an increase in the price of the Professors tickets—matriculation and graduation fees—had been decided on by the Board, as follows:

Professors tickets, $12.00 each; Diploma fee $10.00; Matriculating ticket $4.00; Matriculating ticket to students engaged with members, $2.00.

The report of the Treasurer of the Label Committee was read and accepted.

The report of the Publishing Committee was read and accepted, and the Committee directed to publish such portion of the report as they deemed proper.

To the Philadelphia College of Pharmacy;

The Editor, on behalf of the Publishing Committee, respectfully reports that the Journal has been published regularly during the past year, extending to the 41st volume, second number. The new subscribers since last report amount to one hundred and thirty-six, (136).

The Editor regrets to say that the contributions of original observations by members of the College have greatly fallen off during the last few years, during and since the war, owing probably to greater absorption by business cares, and he earnestly hopes that an improvement in this respect will be manifested. We are constantly receiving the advantages of the observations of European pharmaceutists, and it is just that we should make a return. The labor of editing is much increased by this deficiency, and at best its results are not a proper substitute for the regularly accruing observations of a number of intelligent minds engaged in the daily routine of our profession.

It is not unknown to many of the members that the brief annual reports which accompany the Treasurer's statement are the production of the Editor; in fact no regular meeting of the Publishing Committee has occurred for several years. The Treasurer of the Committee, Charles Ellis, has served the College in this capacity for more than thirty (30) years, during which period the subscriptions to the Journal have been col-

lected and the distribution of the Journal by mail and otherwise effected by the firm of which he is a member. In the early days of its existence the cost of printing and paper was much less than at present; even as late as 1846, the whole amount paid out for printing and other expenses was $689, whilst last year the printing bills alone were 1848 dollars.

Whatever may have been the custom of the Committee in the earlier years of its history, there has been no regular organization or collective action of latter time. The accounts of the Treasurer are annually rendered and accepted, and so entire has been the confidence of the College in his disinterested action, that, so far as the Editor knows, these accounts in the long period of his service have never been audited. This has probably arisen from the independent position of the Journal and Committee outside of the Board of Trustees, and outside of the Treasury of the College. From the beginning, so far as the Editor is informed, its reverses and successes went on without disturbing the current of College finances until, in 1846, a resolution of the College was passed, directing the Treasurer of the Publishing Committee to pay fifty dollars a year to the Finance Committee, which he continued to do for fifteen years, making a gross sum of $750. On the 25th of September, 1854, the late Prof. Thomas offered a resolution which directed the Publishing Committee to furnish the Journal to contributing and life members free of charge. This resolution was referred to the Publishing Committee to be reported on at the next meeting. At the Annual Meeting in March, 1855, the Committee reported that they were not prepared to recommend the adoption of the resolution of Prof. Thomas, and suggested a modification. This was not agreed to, and the original resolution of Dr. Thomas, amended by withholding the Journal from members in arrears, was adopted by a small majority. By this act, about one hundred of the best subscriptions to the Journal were rendered unavailable to its treasury. Notwithstanding this large draft on their resources, the Committee continued to report an increasing annual balance in its favor, so as to be able, in 1858, to contribute $150 towards repairing the College Hall. This flourishing condition continued until 1861, when the balance in favor of the Committee was $325.27, when the breaking out of the war suddenly reduced the amount of collections nearly six hundred dollars, and compelled the treasurer to report a reversed balance against the Committee of $229.41. In 1862 though there was an increase of collections, this reversed balance continued to be $206.50. In 1863 it increased to $325.47. At this juncture the Treasurer of the Publishing Committee was authorized, by resolution of the College, to draw on the Latin Label Committee for the amount of the deficit. In 1864 the Treasurer reported a balance due the Committee of $347.73; in 1865 this balance was reduced to $223.87. At this period, after the close of the war, we all remember the large accession to prices incident to taxation, and the consequent rapid rise in the value of labor which reached into every department of trade and production. But what more specially crippled the

finances at this time was the unprecedented rise in the value of paper, all of which influences compelled the Treasurer to report in March, 1866, a reverse balance of $194.38. The printers bill, which in 1864 was $947.25, increased in 1865 to $1216.00, in 1866 to $1686.07, in 1867 to $1768.87, and in 1868 to $1848.78, as has been stated. In consequence of this increased expenditure, notwithstanding a large increase in the subscription list, the balance due the Treasurer in 1867 was $367.93, which increased to $570 in 1868, in March last, when the Treasurer was again authorized to draw on the Label Committee for that amount. It is proper to state that the edition, which in 1861 was twelve hundred, in 1865 had gradually been reduced to nine hundred, and now has increased to fourteen hundred. We have now come to the current year ending with the meeting to-night. In November last, on the return of the Treasurer, after a long absence, the payments had been so tardy that the accounts showed a balance against the Committee of $375, with printing bills for nearly seven hundred dollars awaiting payment. Earnest measures were immediately taken by the Treasurer to promote the collection of subscriptions due the Committee, and the Treasurer's report, to be read presently, will exhibit how well his efforts have been rewarded, by showing a cash balance in favor of the committee of $34.88, the collections since November last amounting to more than $1900.

In taking a retrospective glance at what has been said in this report, it will appear, *firstly*, that within the last thirty years the Journal has received no aid directly from the College treasury; *secondly*, that it has received aid on two occasions, by order of the College from the funds in the hands of the Treasurer of the Label Committee, amounting to $930.80: *thirdly*, that during the same period and at various times when the College needed aid, the Treasurer of the Publishing Committee paid into the treasury of the College $900 in cash; and within the last fourteen years has furnished to members about fourteen hundred volumes, the subscription value of which amounts to more than $4200. In view of these facts, it is believed to be a reasonable expectation, when such difficulties again beset the Journal as have assailed it during the past eight years, that the College should pay the Committee for the subscriptions of members. It has been the desire of the Committee generally, and of many members of the College, to have the business of the Journal transacted at the College Hall by a competent actuary having this and other duties; but as that is not possible at present, the Treasurer has agreed to continue his exertions as regards the financial and distributional departments of the Committee until the Publishing Committee may deem it for the best interests of the journal to adopt another plan.

WILLIAM PROCTER, JR.

March 29th, 1869.

The Committee on Ways and Means reported progress. The resignations of A. T. Hazzard and John C. Savery were read and accepted; the resignation of Mr. Hazzard to take effect from its date, Sept. 25th, 1868.

On motion of Ambrose Smith, Mr. Savery, was allowed to retain his certificate of membership. The Treasurer was directed to notify all members in arrears that their names were liable to be stricken from the roll.

The following communication from the County Medical Society was read:

"At a meeting of the Philadelphia County Medical Society, held on Saturday evening, March 20th, 1869, to consider the bill before the State Legislature, to prevent the adulteration of drugs, a resolution was adopted that a committee of five be appointed to confer with the Druggists upon the subject. The committee appointed consists of Drs. S. D. Gross, L. P. Gebhard, Geo. Hamilton, J. G. Stetler and Robert Burns. The Assistant Secretary was instructed to notify the College of Pharmacy of such meeting, and of the appointment of such committee, likewise to request the College of Pharmacy to appoint a similar committee, and to name the time and place of meeting of said committee.

Signed,

L. S. Bolles, 1609 Spruce St.,
Assistant Secretary.

On motion, the Chair appointed the following committee to confer with the committee of the County Medical Society:

William Procter, Jr., A. B. Taylor, Edward Parrish, John M. Maisch, Charles Bullock.

A. B. Taylor stated that, as one of the Secretaries of the meeting of Druggists lately convened, he had sent a copy of the resolutions of said meeting to the Secretary of the County Medical Society, but as the Secretary was not present at the last meeting, the resolutions were not presented.

On motion of Robert Bridges, M.D., it was resolved that when this meeting adjourns it will adjourn to meet this night two weeks.

A resolution was adopted authorizing the Committee on Ways and Means to borrow five thousand dollars on a mortgage of the College premises, to enable the Building Committee to settle in full the debt incurred in building and furnishing the College Hall.

The following communication was read:

Philada., 3mo. 29, 1869.

To the Members of the Philadelphia College of Pharmacy:

Esteemed Friends.—Deeply interested as I have always been in the Philadelphia College of Pharmacy, having been connected with the institution from its origin, now nearly forty eight years; and having served you during long periods as Secretary and as President—positions which you voluntarily bestowed upon me, and which may be viewed as evidences of your confidence and regard; I am unwilling to sever the relation in tendering my resignation of the Presidency of the College, without conveying to you the assurance of my kind feelings, and expressing my cherished recollections of the enjoyment derived from so many years of associated labors with my friends.

In withdrawing from active labor in the College, it is with much satisfaction that I reflect on the excellent accommodations its new Hall provides for the varied objects of our institution.

The erection of such accommodations has necessarily caused the expenditure of a large sum of money. I may be permitted to allude to the

importance of making an early provision, by means of a sinking fund, for its gradual extinction.

With sincere regard, I remain your friend,

CHARLES ELLIS.

After due deliberation it was moved and adopted that the request of Charles Ellis, declining re-election as President of the College, be acceded to; and the following minute was made, expressing the sense of the College in parting with its old and highly esteemed officer:

"Our retiring President was one of the original members of this College—but few of whom now remain in our midst. He has seen this institution progress from infancy to the maturity and vigor of a well developed and useful organization. For fourteen years he served as Secretary, and for fifteen years was presiding officer of this College. In retiring from active duty he has our grateful remembrance of his services—our hopes that his counsel and his interest in our institution will remain with us, and our best wishes for the future of his life."

The annual election being ordered, Caleb H. Needles and S. Mason McCollin, as tellers, reported the election of the following officers:

President,	Dillwyn Parrish.
1st Vice-President,	William Procter, Jr.
2d Vice-President,	Robert Shoemaker.
Treasurer,	Ambrose Smith.
Recording Secretary,	Charles Bullock.
Corresponding Secretary,	Alfred B. Taylor.

Trustees.

Robert Bridges, M. D., T. S. Wiegand, T. M. Perot,
Danl. S. Jones, John M. Maisch, James T. Shinn,
Saml. S. Bunting, Charles L Eberle.

Publishing Committee.

Charles Ellis, Edward Parrish, Alfred B. Taylor,
John M. Maisch, Wm. Procter, Jr.

Committee on Sinking Fund.

Thomas S. Wiegand, T. Morris Perot, James T. Shinn.

Delegates to American Pharmaceutical Association.

James T. Shinn, S. Mason McCollin, Wilson H. Pile, M. D.
Wm. Procter. Jr., Alfred B. Taylor.

On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

An adjourned meeting of the College was held on the evening of April 12th, 1869, at the College Hall, pursuant to adjournment. The President, Dillwyn Parrish, in the Chair. 31 members present.

The Committee of Ways and Means made their final report, which was accepted and referred to an Auditing Committee, consisting of Jacob L Smith, Wilson H. Pile, M. D., and Caleb H. Needles.

From this report it appears that the whole amount received for the Building Fund was $34,844.08

From the following sources:

Sale of College on Zane street,	$15,000.00	
Cash from Treasurer of College,	874·89	
Refunded by Gas Company,	126.35	
Contributions,	8,655.50	
Borrowed on mortgage,	5,000.00	
" " scrip,	5,000.00	
Interest received,	187.34	
		$34,844.08

The whole amount expended by order of Building Committee, $34,649.98

Balance due College, and subject to order $194.10

The Committee having fulfilled the object of their appointment and exhibited a detailed statement of their receipts and expenditures, ask that Auditors be appointed to verify their account.

Signed DILLWYN PARRISH, *Chairman.*
THOMAS S. WIEGAND, *Secretary.*

The balance of $194.10 was directed to be placed to the order of the Hall Committee.

On motion of E. Parrish, the collection of outstanding subscriptions was referred to the Committee on the Sinking Fund.

A resolution was adopted directing the President and Secretary to issue an order or warrant for the amount of the unexpended balance of the legacy of A. S. Roberts, loaned to the Committee on Ways and Means in accordance with a resolution of the College adopted Sept. 28, 1868.

Richard Walmsley, Israel J. Grahame and Charles Eugene Haeneher were elected resident members of the College.

On motion of Edward Parrish, it was moved and adopted that the College elect a Solicitor. Albert S. Letchworth, Esq., being nominated, and an election ordered, Mr. Letchworth was unanimously elected.

On motion of Alfred B. Taylor, the following Committee was appointed to revise the By-Laws of the College, viz.: A. B. Taylor, William Procter, Jr., T. S. Wiegand, James T. Shinn, Charles Bullock.

On motion of A. B. Taylor, it was resolved, that when we adjourn we adjourn to meet on Monday evening, May 10th.

Wm. Procter, Jr., on behalf of the Committee appointed to meet the Committee of the County Medical Society, made a verbal report that a meeting was held, and a free expression of views given by physicians and pharmaceutists relative to the proposed legislation to prevent adulteration in drugs, which resulted in unanimously advising delay until the next session, to give time for the preparation of a proper law. It was also resolved to request the College of Physicians to appoint a Committee to represent that body in the conference.

The names of seven members in arrears were directed to be stricken from the roll of the College.

This being the time for the appointment of a committee to effect a

preliminary Revision of the United States Pharmacopœia, to be sent by our delegates to the Decennial Pharmacopœia Convention of 1870, as the contribution of this College, the following members were appointed:

Alfred B. Taylor,	Edward Parrish,	William Procter, Jr.,
Charles Bullock,	James T. Shinn,	Ambrose Smith,
T. S. Wiegand,	Chas. L. Eberle,	Wilson H. Pile, M. D.
Henry N. Rittenhouse,	Charles Shivers,	Israel J. Grahame,
	John M. Maisch.	

On motion, then adjourned.

CHAS. BULLOCK, *Secretary.*

Editorial Department.

LEGISLATION FOR PHARMACY IN PENNSYLVANIA.—During the two months which have elapsed since our previous article with this caption was penned no progress has been made by the Legislature in carrying out the unjust scheme of law which originally emanated from a committee of the State Medical Society, unjust because oppressive, not reaching the object aimed at, and insulting to the respectable body of Druggists and Pharmaceutists of Philadelphia, who, though to be subjected to the rigorous annoyances of the law, were in no wise consulted in its creation.

In saying this it is with no intention of reflecting unjustly on the State Medical Society as a body, which, deeming the profession to be suffering in its usefulness by adulterated medicines, authorized a committee to memorialize the Legislature to appoint an inspector of drugs and to make drug adulteration a misdemeanor. We believe its committee to have been a very unfit one, and, profiting by the results of the crusade it has carried on against the druggists and apothecaries through the Legislature and a portion of the public press, we earnestly hope the State Society will hereafter have the justice and courtesy to apprise the College of Pharmacy of their intentions before they thus assume to legislate for the druggists and pharmaceutists of Philadelphia.

Pending the existence of the second bill, a meeting of the druggists, pharmaceutists and manufacturing chemists of Philadelphia was called by the Secretary of the College of Pharmacy, and met on the evening of March 16th, at the hall of the College. The meeting was organized by appointing Robert Shoemaker, *President;* Thomas H. Powers, Charles Ellis, Mitchel J. Rosengarten, W. Procter, Jr., T. Morris Perot and Wm. C. Henszey, *Vice-Presidents;* and Alfred B. Taylor and Wm. J. Jenks, *Secretaries.*

The Chairman opened the meeting by a brief history of the legislation, and its relation to the druggists of Philadelphia, concluding his remarks by presuming that none were opposed to the appointment of a proper person for inspector of drugs, but he should like to hear a free expression in regard to the matter.

Prof. Parrish explained that apothecaries desired a suspension of legislation in order that time might be had to perfect a bill now in the hands of a committee of the American Pharmaceutical Association. He objected to hasty legislation and believed mature deliberation necessary. A committee of the Trustees was now co-operating with the other committee, and two members had gone to Harrisburg and represented to members of the Legislature the position of the College of Pharmacy and druggists generally in the case, and why they wished delay. He had prepared a series of resolutions designed to represent the sentiment of the meeting, if approved, and also had a copy of the bill of the Association as modified in joint committee. At this juncture the reading of the objectionable bill (see page 183 of last number) was called for, and it was read. Prof. Parrish now read the other bill, based on that of the Association, and which was yet incomplete. This bill does not include a section relative to adulterated drugs, but aims at the registration of all retail dealers in poisons and drugs at present existing, and provides that no persons shall hereafter be registered unless they shall have undergone a successful examination by a properly authorized examining board. It also regulates the sale of poisons, a schedule of which is annexed, and excepts country physicians who keep their own medicines.

A discussion now ensued, during which several speakers rambled from the point at issue, but all agreeing that the bill before the Legislature was objectionable. Prof. Parrish offered the following preamble and resolutions:

Whereas, There is an obvious necessity for the enactment of laws to regulate the selling and dispensing of medicines and poisons, to promote the education of experts fitted to assume those delicate and responsible duties, and thus to suppress the adulteration and sophistication of drugs and medicines; *and whereas*, those only who by education and experience are acquainted with the difficulties of the subject are competent to frame laws for the promotion of these desirable objects:

1. *Resolved*, That the safety of the public demands that it should be unlawful for any one to sell medicines by retail, or to compound the prescriptions of physicians, without being first examined by a competent board of examiners as to his fitness to judge of and test the qualities and genuineness of drugs and chemicals, and to mix, combine, and dispense these according to the well-established principles of pharmaceutical science.

2. *Resolved*, That the sale of substances dangerous to human life should be especially restricted by law, and connected with precautions calculated to insure against mistakes, and to lead to the detection of any cases of accidental or criminal injury or homicide.

3. *Resolved*, That "The Pharmacy and Poison Act," prepared and now in course of revision by a committee of the American Pharmaceutical Association, with a view to procuring uniform legislation in all the States of the Union, in its leading features merits our approval, and we ask for it, when perfected by further comparison with the laws of foreign countries, and by consultation with leading pharmaceutists in this and other States, the careful consideration of the Legislature and of the community for whose benefit and protection it is designed.

4. *Resolved*, That the adulteration and sophistication of medicines is an evil only partially reached by the special examination provided for by the United States Government at the several ports of entry, and by the vigilance of the several pharmaceutical colleges and associations, and any just and practical laws which can be devised for its suppression shall have our earnest and hearty support; yet we look to the more general cultivation and spread of pharmaceutical science, and the more thorough professional education and organization of dealers and compounders of drugs and medicines as the surest guarantees of the purity and efficiency of remedial agents.

5. *Resolved*, That we have no confidence in either of the bills recently introduced into the Legislature of Pennsylvania, the one looking toward the appointment of a State Inspector of Drugs, and the other authorizing summary processes for searching pharmaceutical stores, and the arrest of their owners at the instance of irresponsible informers, as neither law would, in our judgment, prove sufficient or useful, while the latter especially would lead to endless annoyance and petty litigation.

The resolutions were seconded by Dr. Reid, and unanimously adopted.

Dr. Reid believed that druggists should co-operate to secure uniformity in prices; that they should repudiate the giving of per centages to physicians.

Ambrose Smith thought that very few instances of physicians receiving per centages existed.

The President did not think any respectable physician would accept it.

G. W. Vaughan said this practice of giving physicians a per centage was common in his district. He believed it a great evil and a growing one, and said that he could name physicians who received per centages that would surprise the meeting.

Prof. Procter recalled the attention of the meeting to the alleged adulteration of drugs. It would be satisfactory to him if gentlemen present would freely express themselves in regard to the feasibility of a law to prevent adulteration. He believed there was adulteration in drugs, but a much greater adulteration in pharmaceutical preparations.

Prof. Parrish believed roguery in drugs would be reached more effectually through the ethical rules of organized bodies, and especially by a law of registration, to give character and standing to our profession, than by criminal prosecutions.

Dr. Stetler, a member of the medical profession, was present from his interest in the subject, and hoped there would be no antagonism with physicians in the matter of the proposed drug law. He gave a brief history of its origin, and claimed that the State Medical Society only wanted to get pure drugs. He hoped that both professions would unite in getting a proper law that would reach the evil.

Charles Ellis approved of co-operation with physicians, but counselled delay till next year to mature action.

Mr. Bullock had a high regard for physicians, but did not see in what they should be consulted in regulating the drug trade, a matter which he deemed beyond their province. The law, in his opinion, should emanate solely from druggists and pharmaceutists.

Others corroborated this view, when, after some further debate, on motion of James T. Shinn, it was ordered that a copy of the resolutions adopted above be sent to the Philadelphia County Medical Society, to the College of Physicians, and to the Chairman of the Judiciary Committee of the Legislature.

On the 20th of March a special meeting of the County Medical Society was held at the hall of the College of Physicians in reference to the bill for the prevention of the adulteration of drugs, a full report of which appeared in one of the public papers on Monday, the 22d. Dr. Knight, President, in the Chair.

Dr. Cummiskey, author of the first bill for a State Inspector, opened the debate by a short history of the defeat of the first bill, which he attributed to the druggists, and referred to the bill of Mr. Rogers (the second bill), which was read.

Dr. Stetler objected to the bill, as not providing for an inspector of drugs.

Dr. Cummiskey replied that the law could not be passed with an inspectorship.

Dr. Stetler asked whether the State Society had given the committee discretionary power to ask a bill without an inspectorship. He thought not, and he objected to the making it the duty of physicians to be spies and informers on the druggists. With this provision he doubted its efficacy, as not one in ten thousand would perform the service. He had attended the meeting of druggists the other evening, and found a willingness to have a law relative to adulterated drugs, but that they objected to both bills that had been read, and especially to the harsh manner in which they had been treated by the Press newspaper.

Dr. Cummiskey did not believe that it would do to join with the druggists and ask a bill of the Legislature, as no bill could be offered that would be acceptable to them and to physicians.

Dr. O'Hara then read a preamble and resolutions which reflected on the druggists for offering any law for abating adulteration, which sustained the action of the State Medical Society, and invited the people to side with the medical profession to urge the passage of the bill.

Pending a vote being taken, Drs. Stetler and Hamilton advised cooperation with the druggists, in which a majority concurred.

The bill was again read, by request, when Dr. Burns, of the Army, made a speech approving the bill, except that there was no agent to carry it out. He wanted a controlling power to enter the laboratory and see what the manufacturing chemist is doing, to see how he is making his quinine and morphia, and whether all is right that goes into them. So, also, the herborists who supply our indigenous herbs and roots should be looked after. The law would be a failure without some such power. In fact, Dr. Burns was for putting the axe to the root of the tree; but it is greatly to be feared that when he sets out to do it he will have as much difficulty in finding the root as he will in applying the axe.

Dr. Cummiskey agreed with Dr. Burns in the main. He thought the bill before the Legislature was the best that could be obtained, and much better than none. The druggists know we differ in opinion, which is the reason they meet and express themselves with the effrontery which they have done.

Prof. S. D. Gross, being asked his opinion, advised co-operation with the druggists by appointing a committee to confer with a similar committee from the College of Pharmacy. If they refuse to act with us, then let physicians take the matter in their own hands. There are as many respectable men among the druggists as there are among physicians, and they could not presume to "wilfully and knowingly" impose on the community and the profession.

Dr. John Bell did not approve of co-operation with druggists. He took high ground as to the rights of physicians to be served with pure medicines, and did not believe the apothecaries would cordially co-operate. In reference to the bill, he saw the difficulty of fixing the charge of "wilful and knowing" adulteration on an apothecary by evidence, and the function of an informer, even when the motives were pure, was objectionable.

Dr. Stetler believed that the druggists were not hostile to legislation on this subject, in evidence of which he asked the Secretary to read one of their resolutions. They have no confidence in either of the bills heretofore brought forward, as impracticable and oppressive. He urged joint action as being more likely to result in proper inspection and the registration of pharmaceutists. He thought very few were competent to act as inspectors, perhaps not half a dozen in this city, as none but a first class analytical chemist is competent. He was in favor of conferring with eminent druggists, and jointly going to Harrisburg to get a law.

The resolution No. 4 of the druggists was now read, when a vote was taken on Dr. O'Hara's resolutions. Yeas 4, nays 10.

Dr. Stetler proposed a committee, which was agreed to, and after some discussion the number fixed as five, when the President appointed Prof. Gross, Dr. Gebhard, Dr. Hamilton, Dr. Stetler, and Dr. Burns, to act as the committee, and the Secretary was directed to apprize the College of Pharmacy that such a meeting had been held, and to request that they appoint a similar committee.

The second bill, referred to in the two meetings above, was withdrawn by the mover, and a third bill, limited in its action to the City of Philadelphia, substituted for it and read in place. This proved to be the most objectionable of all, as, in addition to the previous sections relative to the adulteration of drugs, it contained the following section:

SECTION 2. That the proprietor of any store, dispensary, laboratory, or establishment, situate in said City, who shall employ any person not a graduate in Pharmacy to compound or admix any drugs or medicinal preparations, for prescriptions or retail sale, shall be deemed guilty of a misdemeanor, and on conviction thereof shall forfeit and pay to said City a penalty not exceeding two thousand dollars, together with costs of prosecution.

This law carried out would shut up half the stores in town, some among the first in reputation, which, from the system of apprenticeship long in vogue in Philadelphia (and which has done more to furnish good apothecaries than any other course), would have rendered the proprietors unable to comply with the law. Where will the next generation of apothecaries get their tuition, if they are not to be taught in the shop and laboratory, under the supervision of the proprietor and his qualified assistants? It is an absurdity, like requiring a child to learn to swim without going into the water, and strikes at the very root of progress in skill and knowledge.

As soon as its character became known the bill was printed and distributed, and a committee sent to Harrisburg to explain its absurdity and impracticability, and a large meeting of prominent pharmaceutists, druggists and chemists met by call at the house of Mr. Charles Ellis, to deliberate on what should be done. After considerable discussion, the draft of a bill prepared by one of the members was read, some additional clauses added, so as to include the regulation of the sale of drugs and poisons, by requiring all who now sold them to be licensed, and requiring all future pharmaceutists beginning in Philadelphia to be either graduates, or to have had a special examination by the College of Pharmacy. The intentional adulteration of drugs was made a misdemeanor, punishable by a fine of $500, and the sale of adulterated drugs, knowingly, by a similar penalty. The second section of the third bill (above quoted) was substituted by the following:

Section 2. That no person not a graduate in Pharmacy shall be allowed by the proprietor of any pharmaceutical store to compound or dispense the prescriptions of physicians, except as an aid under the immediate supervision of said proprietor or his qualified assistant, unless he has been at the business at least two years, and has attended one full course of lectures in the Philadelphia College of Pharmacy, and no proprietor shall leave his store with any but a qualified person.

This draft was printed, an interview had with Mr. Rogers, of the House of Representatives, who had brought out the objectionable bill, and its provisions carefully explained. On returning to Harrisburg Mr. R. had bill No. 3 recommitted to the judiciary committee. He was told that the bill prepared by the druggists was only intended for passage in case the alleged pressure on the Legislature required them to pass some bill, but that it was the desire of the College of Pharmacy and the druggists generally not to pass any bill this session, so as to give time to mature a blil properly and wisely to embrace drugs, poisons, education and registration.

Meanwhile, at the annual meeting of the College of Pharmacy, on the 29th of March, the resolution of the County Medical Society was read, considered, and a committee of five, consisting of Messrs. Procter, Parrish, Maisch, Taylor and Bullock, were appointed to meet the committee of the County Medical Society, when they should appoint the time and place.

On Saturday evening, April 10, the committees of the County Medical

Society and the Philadelphia College of Pharmacy met at the hall of the College of Physicians. Prof. Gross was invited to take the chair, and Prof. Parrish was appointed Secretary. The Chairman stated that the object of the meeting was known to all present to be in relation to getting at some means to prevent the adulteration of drugs. After a free and candid expression from the members of both committees it was suggested that the document issued by a former joint committee of the two bodies now represented be read from the American Journal of Pharmacy for 1852, which seemed so satisfactorily to regulate the relations between the two professions. The bill prepared by the pharmaceutists as a substitute for the bill before the House, at Harrisburg, was read, and satisfied the medical gentlemen that the druggists were not disposed to avoid legislation, but wanted time to prepare carefully a wise and comprehensive act. The physicians and apothecaries entirely agreed in this view, and decided to use the influence of the joint committee to postpone legislation for this session, to invite the co-operation of the College of Physicians, and make an effort to be prepared with a suitable law to be presented to the next Legislature.

All these influences combined, and especially the candid representation by the apothecaries of its practical working, prevented the passage of the proposed law, and the Legislature has now adjourned.

The bill of the Association is applicable to the entire State. The temper of the Legislature will render it extremely difficult to obtain any such law, and it will be wise in our College to keep the subject alive and secure a proper bill for this City, and trust to the future to extend its provisions to the State.

The Gynœological Society of Boston has been instituted during the present year, for the purpose of promoting a knowledge of the diseases of women and the proper treatment for them. *President*, Winslow Lewis, M.D.; *Treasurer*, Geo. H. Bixby, M.D.; *Secretary*, Horatio H. Storer, M.D. One of the objects of the Society is to create a library of works on the art and science of Gynœology.

New York College of Pharmacy—At the Annual Meeting of this Institution, held March 18th, 1869, the diploma of the College was conferred upon the following graduates:

Thomas J. Covell,	George A. Evans,
William Neergaard, Jr.,	George W. C. Phillips.

The following officers were elected for the ensuing year:

President, George C. Close; *Vice-Presidents*, William Neergaard, John Milhau, Arthur W. Gabaudan; *Treasurer*, Wm. Wright, Jr.; *Secretary*, P. W. Bedford; *Trustees*, Henry A. Cassebeer, Jr., Isaac Coddington, John W. Shedden, Theobald Frohwein, Adolph G. Dunn, Augustus W. Weismann, David Hays, Edward L. Milhau, John Frey.

Delegates to attend the Chicago meeting of the American Pharma-

ceutical Association, Sept. 7th, 1869—P. W. Bedford, Isaac Coddington, Max Frohwein, A. W. Weismann, William Wright, Jr.

From the Treasurer's report it appears that unusual efforts have been and are being made to promote the interests of the College, and incidentally we learn that there is a prospect of Dr. E. R. Squibb, giving a course on Practical Pharmacy next winter. Should this be carried out, we feel no doubt but that his effort will prove highly useful to the N. Y. School of Pharmacy.

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (*Continued from Page* 182, *of this volume*).

John Goodyear, (additional)	$20 00	Cash,	$25 00
Lippincott & Son,	5 00	C. N. Dalrymple,	15 00
Allen Shryock,	3 00	Zeta Phi Society, 1869,	50 00
R. Nebinger, (additional)	25 00		$ 328 00
Richard Peltz,	100 00	Previously,	8022 50
E. McC. Boring,	10 00		
Geo. C. Bower, (additional)	25 00	Total contributions,	$8350 50
Alfred Wiltberger,	25 00		
Wm. Evans,	25 00		

The Probe; an inquiry into the use of stimulants and narcotics, the social evils resulting therefrom, and methods of reform and cure. By Joseph Parrish, M.D. Issued quarterly from the Sanitarium, Media, Pennsylvania, price one dollar per year; pp. 32, octavo.

This new journal, commenced in a good cause, deserves success. We believe there is a perennial supply of material for its pages, and trust that the editor may be liberally encouraged to proceed.

Catalogue of the officers and students of the University of Michigan for 1868-9, with a general description of the University. Ann Arbor; published by the University, 1869; pp. 79.

The extensive operations of this Institution are well shown by a glance over its catalogue of students in the several departments of science literature and the arts, of law, of medicine, of engineering and of pharmacy. The latter branch of this school we have before alluded to, and consists of lectures on chemical physics, inorganic and organic chemistry, toxicology and materia medica, recitations and lectures on practical pharmacy, with systematic instruction in analysis and practical pharmacy. The latter department is under the direction of Prof. S. H. Douglass. During the prosecution of this course students are admitted to the classes in botany and Latin, French and German, if properly prepared to enter. The time required for the pharmaceutical course is from one and a half to two years, and at its terminus those who pass satisfactory examinations and submit an acceptable thesis, will receive the diploma of "pharmaceutical chemist."

Annual Report of the U. S. Commissioner of Agriculture for the year 1868. Washington, D. C., pp. 18, octavo. (From Dr. Toner.)

This report consists of a few general remarks under various heads, among which are "agricultural education," "international exchanges," "cattle diseases," "grapes and wine," "cinchona planting," chemical laboratory for analysis, "entomology," the museum, garden and arboretum, and distribution of seeds.

We learn from the report that a system of international exchanges has been established with several of the governments of Europe, Asia and South America, and that valuable exchanges have been arranged for with the directory of Kew Gardens, the Garden of Melbourne, in Australia, and other places. The tropical and subtropical fruits are being introduced on trial into Florida, and the culture of cinchona is advocated. The chemical department of the patent office has been re-modelled, to be placed in the new building, now nearly completed, for the accommodation of the department of Agriculture, and from the report we judge that the new laboratory will be fitted up in accordance with the modern improvements in the experimental laboratories of Europe. From the tone of the report we must infer that the organization of the laboratory is not yet complete as regards the objects to which it is to be devoted. The idea of testing soils, manures, and even carrying on chemico-physiological researches in connection with questions in agriculture, may all be appropriate, but the *system* under which the work is to be prosecuted should be well digested and clearly defined before starting, that its action may be limited to its legitimate channels, and not become subservient to private interests. For instance, inquiry into the best chemical remedies for the cattle plague, or for destroying the mildew in the grape, or for the preservation of timber etc., would be quite proper, because of general utility, whilst specimens of soil for analysis from the plantations of Congressmen A, B and C would be illegitimate employment for government chemists, unless in some way connected with experimental culture for the general benefit.

Half Yearly Compendium of Medical Science.—A synopsis of the American and foreign literature of Medicine, Surgery and the Collateral Sciences for six months. Edited by S. W. Butler, M.D., and D. G. Brinton, M.D. Part 3. Jan., 1869. Phila., S. W. Butler, 115 south 7th st., 1869; pp. 336, octavo. Price $3 per annum.

The authors feel encouraged at the success which has attended their enterprise thus far. "This number contains nearly 400 articles, collated from nearly 250 American and 230 foreign writers and speakers." The statistics of opium poisoning and other branches of toxicology are well worthy of examination.

Maw & Son's Quarterly Price Current of Surgeon's Instruments and appliances, also the apparatus, implements, utensils and other requisites employed in pharmacy, the dispensing of medicines, &c., &c.

Also *Book of Illustrations* to Maw & Sons Quarterly Price Current. London, 11 and 12 Aldgate street, 1869; pp. 344.